DOE-ID NEPA CX DETERMINATION
IDAHO NATIONAL LABORATORY

CX Posting No.: DOE-ID-ICP-10-010

SECTION A. Project Title: INTEC – Light Water Breeder Reactor Fuel Rods Loading for Disposal

SECTION B. Project Description

The proposed action will transfer drums of low-level waste to a transportation cask in the Weather/Decon Enclosure at the Idaho CERCLA Disposal Facility (ICDF). The U233 waste in this waste stream consists of 64 drums of unirradiated fabricated single rods consisting of $U0_2$/ThO_2 fuel pellets in zirconium rods and one drum with two short rods and miscellaneous bagged pellets. The waste was generated during the development of the Light Water Breeder Reactor (LWBR) during the 1970's. The waste was received from the Bettis Atomic Power Laboratory from late 1980 to early 1981. The drums will be loaded into the 10-160B Cask for disposal at the Nevada National Security Site. This operation is currently performed at waste management facilities within INTEC, however with the onset of winter the project is proposing using the ICDF Weather/Decon Enclosure for protection from adverse weather conditions.

The LWBR pellets are high-fired, ceramic material manufactured from a mixture of uranium dioxide ($U0_2$) and Thorium oxide (ThO_2). The ceramic contains, on the average, slightly more than 2.1 % U-233 as $U0_2$ to as high as 12% U-233. The uranium mixture is a mixture of 97% U-233 and 3% other uranium isotopes.

The ceramic was manufactured by the Bettis Atomic Power Laboratory under the direction of the Office of Naval Reactors. The pellets were fabricated by compressing intimate mixtures of $U0_2$ and ThO_2 powders. The compressed pellets were then sintered at a temperature of 1790 "C for 12-hour periods. The resultant high-fired pellets have densities greater than 97% of the theoretical density and have the characteristics of a glass in that the material is tightly bonded together in a nearly crystalline form and exhibits conchodial fracture that is a characteristic of a glass.

The LWBR material was made from U-233 oxide powder prepared at Oak Ridge that contained less than 10 ppm U-232. The low concentration of U-232 meant that the material could be handled in non-shielded facilities for a short period immediately after separation of the U-233 from the U-232 daughter products.

The proposed operation will transfer metal boxes holding 15 drums to the ICDF Weather/Decon Enclosure via truck or forklift. The metal box will be staged in the ICDF Weather/Decon Enclosure as drums are loaded and shipped. Individual drums are removed from the box and handled with a crane equipped with a container lifter during loading operations. The drums are not opened during the loading operation. Individual drums are not handled with a forklift and boxes are not lifted with a crane inside of the ICDF Weather/Decon Enclosure.

The proposed action is an ARRA funded action and is currently scheduled for up to three shipments per week through December 2010.

SECTION C. Environmental Aspects / Potential Sources of Impact

4. Chemical Use and Storage – Petroleum products will be used in support of the proposed action. Project personnel will use non-hazardous chemical substitutes in the place of hazardous chemicals as long as the non-hazardous substitutes meet the requirements/specifications of the activity. Spill prevention/ minimization measures will be used during storage and use of chemicals/fuels.

10. Hazardous/Rad. Material or Waste Handling and Trans. – The proposed action will load drums of waste into a cask for shipment to the Nevada National Security Site for disposal. The loading actions will be performed in compliance with the Safety Basis Supplement.

16. Radioactive Waste Generation and Management – A small amount of secondary waste will be generated in the form of swipes. These swipes and any other associated radcon waste will be managed a part of the normal low-level radioactive waste stream. The proposed action will manage low-level waste that has been in storage for many years. The waste will be managed for disposal off-Site through Waste Generator Services.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: 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, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: Categorical Exclusion B6.5, Siting/construction/operation/decommissioning of facility for characterizing/sorting packaged waste, overpacking waste

Justification: Performing the LLW loading actions in the Weather/Decon Enclosure at the ICDF will not have any significant environmental impacts and is categorically excluded from further NEPA review

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

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on November 16, 2010.