

**FINDING OF NO SIGNIFICANT IMPACT
U-233 DISPOSITION, MEDICAL ISOTOPE PRODUCTION, AND BUILDING 3019
COMPLEX SHUTDOWN AT THE OAK RIDGE NATIONAL LABORATORY,
OAK RIDGE, TENNESSEE**

AGENCY: U. S. Department of Energy

ACTION: Finding of No Significant Impact.

SUMMARY: The U. S. Department of Energy (DOE) has completed an Environmental Assessment (EA) [DOE/EA-1488] that evaluates the processing of uranium-233 (^{233}U) stored at the Oak Ridge National Laboratory (ORNL) and other small quantities of similar material currently stored at other DOE sites in order to render it suitable for safe, long-term, economical storage. The ^{233}U is stored within Bldg. 3019A, which is part of the Bldg. 3019 Complex. Additionally, the proposed action would increase the availability of medical isotopes needed for research and treatment and place the Bldg. 3019 Complex in safe and stable shutdown for transfer to the DOE program for decontamination and decommissioning (D&D). DOE has determined that there is no programmatic use for the ^{233}U currently in storage at ORNL other than as a possible source of medical isotopes.

DOE action is needed to (1) render the ^{233}U material suitable for safe, long-term, economical storage eliminating the need for safeguards, security, and nuclear criticality controls; (2) provide isotopes for medical research for providing treatment for several types of cancer; and (3) remove the ^{233}U material, allowing the building to be deactivated and transferred to the D&D program, which would reduce DOE's landlord costs and meet the requirements of the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 97-1, which addresses the safe storage of ^{233}U . Recommendation 97-1 describes actions that the DNFSB considers necessary to ensure the safe storage of ^{233}U -bearing materials in the interim and the longer term.

Based on the results of the analysis reported in the EA, DOE has determined that the proposed action is not a major federal action that would significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an Environmental Impact Statement (EIS) is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY OF EA AND FONSI: The EA and FONSI may be reviewed at and copies of the documents obtained from:

U.S. Department of Energy
Information Center
475 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830
Phone: (865) 241-4780

FURTHER INFORMATION ON THE NEPA PROCESS: For further information on the NEPA process, contact:

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DESCRIPTION OF PROPOSED ACTION: DOE proposes to (1) process and package the ^{233}U stored at ORNL and other small quantities of similar material currently stored at other DOE sites; (2) extract ^{229}Th during ^{233}U processing to increase its availability for medical research and treatment, and (3) operate the Bldg. 3019 Complex during the ^{233}U processing and medical isotope production. Other objectives of the proposed action include removing the ^{233}U material from Bldg. 3019A and placing the Bldg. 3019 Complex in safe and stable shutdown for D&D. The D&D of the Bldg. 3019 Complex are outside the scope of this proposed action. DOE would lease its ^{229}Th to Isotek Systems, LLC (Isotek) for commercial beneficial uses. Isotek, located in Oak Ridge, was awarded the ^{233}U disposition contract by DOE on October 9, 2003.

The project would involve several different activities in order to complete the disposition, medical isotope production, and building shutdown. These activities include:

- retrieval and inspection of ^{233}U containers within Bldg. 3019A;
- ^{233}U dissolution and ^{229}Th extraction;
- shipment of depleted uranium oxide (DUO_3) from the DOE Savannah River Site, conversion to depleted uranyl nitrate at Erwin, Tennessee, and receipt of depleted uranyl nitrate at Bldg. 3019A;
- downblending of the ^{233}U inventory and conversion of downblended material to a stable oxide;
- isotope leasing and production; and
- facility shutdown and stabilization.

Isotek would be responsible for design and construction of modifications to Bldg. 3019A and its associated facilities in order to implement the proposed action. Building 3019A would be modified, and shielded workstations would be installed to conduct high-radiation work. Criticality safety controls would be in place to prevent an inadvertent nuclear criticality.

Safe storage of the ^{233}U stored in Bldg. 3019A would be continued, while operations are ongoing, through the revisions of the existing safeguards and security program, configuration management program, authorization basis, and permit(s). Following removal and processing of the stored ^{233}U , other waste and equipment would be removed as applicable.

ALTERNATIVES: In addition to the proposed action, impacts were also evaluated for the no-action alternative. If no action were taken, DOE would continue to have responsibility for the operation of the Bldg. 3019 Complex, and the ORNL inventory of ^{233}U would remain stored within Bldg. 3019A. Continued storage in the Bldg. 3019A would require major capital upgrades and retrofits to critical facility systems that have deteriorated due to aging or that may not meet current standards. Significant, additional annual operating expenses would also be incurred to meet the material-handling requirements associated with repackaging and to provide protection against potential nuclear criticality accidents or theft of the material.

DOE dismissed from further analysis alternatives for the continued storage of the ^{233}U inventory at another location; the use of the material as a tag for Russian highly enriched uranium; development and testing of a thorium fuel cycle; and its use in analytical safeguards procedures. These alternatives were considered but determined not to be reasonable, and they did not meet DOE's purpose and need. Therefore, they were eliminated from further evaluation.

ENVIRONMENTAL IMPACTS: The EA assessed direct and indirect impacts of the proposed action on the following resources: land use; air quality and noise; geology, soils, and seismicity; water resources; ecological resources; cultural resources; socioeconomics; utilities; transportation; waste management; and human health. Cumulative impacts were also assessed.

Under the proposed action, there would be no impact on land use immediately surrounding the Bldg. 3019 Complex since the area is currently used for industrial purposes and is part of the industrialized portion of ORNL. Off-site waste treatment and disposal would only occur at existing permitted/licensed facilities. Further processing of the thorium product to produce medical isotopes would be conducted at new or existing permitted/licensed facilities. No cumulative impact to land use would occur.

Potential air quality impacts would include a minor increase in air pollutants from the process off-gas (i.e., entrained nitric acid, NO_x, uranium oxides, and other trace radioactive contaminants). These emissions would be mitigated by a new process off-gas treatment system to ensure that they would not exceed National Ambient Air Quality Standards, and Isotek would be required to maintain compliance with the Title V permit terms and conditions. Because the Oak Ridge area is designated as an attainment area for all of the ambient air quality standards, the Clean Air Act of 1970 general conformity rules do not apply. Safe shutdown of the facility would also reduce air emissions and have a positive cumulative effect on air quality in the vicinity of ORNL. Because the facility is located within an active industrialized area of ORNL and since no sensitive noise receptors are located in the immediate vicinity, no adverse noise impacts would occur.

Under the proposed action, no effects to geological resources or soils would occur since the activities associated with the proposed project would occur within previously disturbed areas used for industrial applications. Facility modifications would meet the appropriate seismic performance category criteria, and the building should remain stable during and after a seismic event.

No additional adverse effects to water resources would occur under the proposed action. Existing surface and groundwater protection measures at the 3019 Complex, such as spill prevention and spill response plans, would be reviewed and modified or continued, as appropriate, based on the final design for the processing and facility shutdown activities. No change in existing storm water capacity or handling would be expected. The safe and secure shutdown of the Bldg. 3019 Complex would substantially reduce the amount of waste and wastewater generated by the existing and proposed processing operations. This would also have the positive cumulative effect of reducing the potential for a spill or release into the storm water collection system or groundwater.

Implementing the proposed action would not result in any adverse impacts to any habitat or wildlife. Habitat in the vicinity of the Bldg. 3019 Complex is highly disturbed and mostly maintained by mowing. This type of habitat also precludes the presence of rare, threatened, and endangered plant and animal species. Radiation protection of workers and the public, both in the area of Bldg. 3019A and at the Melton Valley product storage facility, should also afford adequate protection to wildlife.

Building 3019A is considered to be contributing to the ORNL Historic District and is eligible for listing in the National Register of Historic Places. DOE completed a Project Summary and Archaeological and Historical Review for the proposed modifications to the facility and determined that the proposed action would not have an adverse effect on the exterior physical structure or visual appearance of the building. In addition, DOE determined that no exterior archeological resources would be affected by the proposed action. The Tennessee State Historic Preservation Officer has concurred with the DOE determination.

Socioeconomic impacts are expected to be minimal. Based on the small number of jobs created and the availability of qualified local workers, no impact on population size is anticipated. Likewise, no high and adverse health and environmental impacts would occur that could have a disproportionate effect on low-income and minority populations. Net jobs lost following the completion of the project will have a negligible employment and income impact in the region of influence.

Any increased utility demand from the proposed action would be within the capacity of the current infrastructure, and no adverse impacts would occur. After the Bldg. 3019 Complex is placed in safe and stable shutdown, the major utility systems serving the facility (i.e., electrical, process, potable, and fire protection water; compressed air; steam; and standby diesel generators) would remain operational until decontamination and decommissioning (D&D) occurs.

No transportation impacts would occur from the transport of materials and equipment associated with the limited construction and modification activities that would take place at Bldg. 3019A, and construction-related traffic would be negligible. Truck transport of depleted uranium oxide, uranyl nitrate, extracted ²²⁹Th, and off-site waste shipments would be conducted by qualified carriers according to all applicable U. S. Department of Transportation and Nuclear Regulatory Commission packaging and transportation requirements. These shipments would not differ substantially from routine operations at ORNL, and any adverse impacts are expected to be negligible.

Under the proposed action, there would be no unacceptable adverse impacts from waste management activities. Waste minimization measures would be implemented, and proper waste characterization, segregation, treatment, storage, and disposal procedures would be followed. All off-site waste treatment and disposal would only occur at existing permitted/licensed facilities. No cumulative impacts would be expected since the incremental contribution of the proposed action to waste generation would be offset, over time, by an anticipated reduction in waste generated once the processing activities were completed and the facility was placed in safe and stable shutdown.

Operations included under the proposed action would not adversely increase chemical or radiological emissions or exposures because operations would be similar to the historical operations of the Bldg. 3019 Complex. However, completion of the project would have many positive impacts, including the elimination of safeguards, security, and nuclear criticality controls and beneficial use of the material for medical research and treatment. Placing the facility into safe and stable shutdown for D&D would also have a positive cumulative impact on human health for workers and the public.

DETERMINATION: Based on the findings of this, and after careful consideration of all public and agency comments, DOE has determined that the ²³³U disposition, medical isotope production, and Bldg. 3019 Complex shutdown at ORNL does not constitute a major federal action that would significantly affect the quality of the human environment within the context of NEPA. Therefore, preparation of an EIS is not required.

Issued at Oak Ridge, Tennessee, this 10th day of December 2004.


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