

FINDING OF NO SIGNIFICANT IMPACT
TENNESSEE VALLEY AUTHORITY
ADDITIONAL USE OF BLENDED LOW ENRICHED URANIUM (BLEU) IN
REACTORS AT TVA'S BROWNS FERRY AND SEQUOYAH NUCLEAR PLANTS
LIMESTONE COUNTY, ALABAMA, AND HAMILTON COUNTY, TENNESSEE

Proposed Action and Need

TVA utilizes nuclear fuel at its Browns Ferry (BFN) and Sequoyah (SQN) nuclear plants that is derived from either commercially available low enriched uranium (LEU) or from weapons-grade highly enriched uranium (HEU) declared surplus to defense needs of the United States government. LEU is defined as containing less than 5 percent of the uranium isotope U-235 while HEU contains more than 20 percent U-235 compared to naturally occurring uranium that has 0.7 percent U-235. The HEU material can be processed (downblended) into blended low-enriched uranium (BLEU) for use as fuel in commercial reactors. Under an existing agreement with the U.S. Department of Energy (DOE), TVA has acquired about 33 metric tons (MT) of HEU for downblending into BLEU. To date, the use of this BLEU in TVA reactors has provided a reliable source of lower cost fuel and has resulted in substantial cost-savings to both TVA and to rate payers.

In 2005, an additional 200 tons of HEU were declared surplus. TVA is proposing to acquire an additional 28 MT of this HEU to produce BLEU fuel for use at BFN and SQN. This would result in TVA obtaining a total of 61 MT of HEU to process into BLEU fuel. To do so beyond the use of BLEU derived from the initial 33 MT of HEU, TVA would also:

- Enter into an agreement(s) with the DOE to obtain the additional HEU.
- Implement contracts to process (handle and downblend) the HEU to BLEU and to fabricate reactor fuel assemblies.

The use of this additional BLEU could result in further substantial cost savings to TVA for reactor fuel, reduce the environmental impacts of the nuclear fuel cycle for TVA reactors, and assist in furthering United States policies and international agreements for the nonproliferation of weapons-usable fissile material.

TVA prepared an environmental assessment to inform decision-makers and the public of whether there was a potential for different or additional environmental impacts relevant to environmental concerns from the use of BLEU fuel at BFN and SQN, as compared to the use of LEU in these reactors. The EA also identified and clarified the applicability of previous NEPA documents and their bounding analyses for the proposed Action Alternative.

Alternatives

TVA considered a No Action alternative and the Proposed Action alternative. The TVA preferred alternative is the Proposed Action alternative.

No Action Alternative - Under the No Action alternative TVA would continue the current use of LEU and partial loadings at BFN and SQN reactors of BLEU derived from the original 33 MT of HEU obtained from DOE. After the original 33 MT of HEU is used, TVA would then utilize (from

about 2016-2022) additional LEU obtained from commercial sources. TVA would not obtain an additional 28 MT of HEU from the DOE.

Proposed Action Alternative - Under the Proposed Action Alternative TVA would continue the use of LEU and partial loadings of BLEU at BFN and SQN reactors that is derived from the original 33 MT of HEU obtained from DOE. After the original 33 MT of HEU is used, TVA would then obtain an additional 28 MT of HEU from the DOE, and enter into contracts for processing this additional HEU into BLEU. From about 2016-2022 TVA would then use LEU obtained from commercial sources, as well as the BLEU for partial fuel loads in BFN and SQN reactors.

Impacts Assessment

The potential for impacts, as well as differences in such impacts between the use of LEU and BLEU in TVA reactors at BFN and SQN, depends mainly on whether there are differences in radiological releases between the two types of fuel. TVA determined that those differences are none to minor. Based upon internal TVA staff scoping, the nature of the actions considered, and the similarity between BLEU and commercially available LEU, TVA evaluated the potential for creating differing impacts between use of LEU and BLEU. These impacts were evaluated for the following processes, media or resources: radiological effects of normal operations, transportation of radiological materials, used (spent) fuel management, nuclear plant safety, the uranium fuel cycle, emissions to air and water resources, and solid waste (other than used fuel). The potential for derivative indirect impacts to result from radiological or nonradiological emissions and the uranium fuel cycle (UFC) were also evaluated for other resources (e.g., biological, endangered species, cultural resources, floodplains, wetlands, and environmental justice).

Implementation of decisions for the continued and future use of additional BLEU in TVA nuclear reactors at BFN and SQN and the acquisition of additional HEU will result in only minor impacts on the human environment during normal operations of TVA reactors. Impacts to the above identified processes, media, and resources are minor and, as discussed in the subject EA (which is incorporated by reference), are bounded by the previous environmental reviews conducted for the assembly, acquisition, processing, fabrication, and transport of interim and final step products, as well as the use of BLEU or LEU in TVA reactors at BFN or SQN.

Mitigation

The avoidance and minimization measures identified in the 2001 TVA ROD for the original 33 MT of HEU would also apply for the continued use of BLEU in reactors at BFN and SQN and the acquisition, processing, and use of the additional 28 MT of HEU. Consistent with the earlier TVA ROD, TVA and its contractors will take all reasonable steps to avoid or minimize harm, including the following:

- TVA will use current safety and health programs and practices to reduce impacts by maintaining worker radiation exposure as low as reasonably achievable.
- TVA and its contractors will meet appropriate waste minimization and pollution prevention objectives consistent with the Pollution and Prevention Act of 1990. As discussed in DOE's 1996 HEU EIS, segregation of activities that generate radioactive and hazardous wastes will be employed, where possible, to avoid the generation of mixed wastes. Treatment to separate radioactive and nonradioactive components will be employed to reduce the volume of mixed wastes. Where possible, nonhazardous materials will be substituted for those that contribute to the generation of hazardous or

mixed waste. Waste streams would be treated to facilitate disposal as nonhazardous wastes, where possible. In addition to following such practices in its own federal facilities, TVA and DOE will seek to include comparable requirements in contracts with the involved commercial facilities.

Public and Intergovernmental Review

Prior to TVA’s adoption of the DOE EIS in 2001 and its subsequent issuance of the ROD for obtaining the original 33 MT tons of HEU, TVA recirculated the original DOE EIS to the public and agencies in the states of Tennessee, South Carolina, and Washington for comment. Four agencies, two organizations and three individuals commented on TVA’s adoption of the DOE document. The comments were summarized and addressed in the 2001 TVA ROD.

Conclusion and Findings

Actions under either the No Action Alternative or the proposed Action Alternative would have no effects on federally listed species, floodplains, wetlands, or the issue of environmental justice beyond those previously reviewed and bounded by the analyses in the environmental reviews noted in the subject EA. The overall impacts are minor for either alternative.

Based on the analyses in the attached EA, TVA has concluded that implementation of either the No Action Alternative or the proposed Action Alternative would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.



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Susan J. Kelly, Senior Manager
Federal Determinations
Environmental Permits and Compliance
Tennessee Valley Authority

Date Signed