Document Type: EA-Administrative Record
Index Field: Finding of No Significant Impact (FONSI)
Project Name: Watts Bar ISFSI
Project Number: 2013-39

FINDING OF NO SIGNIFICANT IMPACT
TENNESSEE VALLEY AUTHORITY

INDEPENDENT SPENT FUEL STORAGE INSTALLATION
WATTS BAR NUCLEAR PLANT

The Tennessee Valley Authority (TVA) proposes to construct and operate an Independent Spent Fuel Storage Installation (ISFSI) at the Watts Bar Nuclear Plant (WBN) in Rhea County, Tennessee. An ISFSI is a facility designed and constructed for the dry storage of spent nuclear fuel and other radioactive materials. ISFSIs are licensed by the Nuclear Regulatory Commission (NRC) under 10 Code of Federal Regulations (CFR) Part 72. The facility at WBN would be composed of a vendor-supplied dry cask storage system and a concrete storage pad facility with supporting infrastructure. The proposed WBN storage pad facility would be comprised of two separate pads: one pad holding up to 80 dry storage casks would be completed by 2016 and would be about 1/2 acre in size, and a second, similarly-sized storage pad would be constructed at the site 15 to 20 years later to hold up to 100 additional casks.

The proposed location of the ISFSI at WBN is a slightly elevated lawn adjacent to the plant's existing northern protected area perimeter. Under the proposal, construction activities for the first pad would begin in late 2014 and would last until late 2015 or early 2016.

There are five primary activities to be performed for this project:

1. Modifications to the existing WBN Auxiliary Building would be necessary to handle, lift, load, seal, and transport the dry spent fuel storage modules. Modifications to the railroad bay floor may be required to support additional weight and an upgraded, single-failure proof, 125-ton overhead crane would be installed.

2. A haul path approximately 1,600 feet in length would be constructed from the WBN Auxiliary Building to the ISFSI pad. A majority of the path would be constructed on currently disturbed grounds and along the existing roadway to minimize new disturbance. The existing roadway's asphalt would be removed during construction and replaced with reinforced concrete to support the weight of the casks during hauling.

3. The ISFSI facility would include two storage pads, drainage systems, fire hydrants, contingency shield walls, landscaping, a cask fabrication pad, an equipment storage building, and a perimeter road.

4. The existing WBN security infrastructure would be modified to include the ISFSI within the plant's protected area.

5. The associated handling, hauling, and storage facilities would be operated for at least 60 years after plant operations cease up to an indefinite period.

The purpose of the proposed action is to provide additional on-site storage capacity for spent nuclear fuel at WBN to support continued operation of the plant. Additional storage capacity at WBN is necessary because plans for permanent storage at a Federally-operated, off-site spent

fuel repository are uncertain and the capacity of the existing WBN spent fuel pool is not adequate to support the long-term operation of the plant.

Currently, spent fuel from operation of the WBN Unit 1 nuclear reactor is stored in specially-designed storage racks within a steel-lined, concrete spent fuel pool inside the WBN Auxiliary Building. As of June 2014, the WBN spent fuel pool is at almost 75 percent capacity. Additional spent fuel storage capacity is needed by 2017 to support Unit 1 operations alone. Additional capacity is also needed to accommodate spent fuel from operations of Unit 2 (current progress on the WBN Unit 2 construction supports a December 2015 start date).

The proposed action is the subject of an environmental assessment (EA) prepared by TVA that is incorporated by reference herein. TVA analyzed two alternatives in the EA: the proposed action as described above and the no action alternative, under which TVA would not construct and operate an ISFSI and would continue to utilize the existing spent fuel pool for cooling and storage of spent fuel. The proposed action alternative is preferred by TVA.

As described in the EA, TVA incorporates by reference numerous, relevant environmental analyses previously completed by TVA, Department of Energy, and the Nuclear Regulatory Commission. By incorporating previous analyses and information, TVA limited the scope of the EA to project- and site-specific information to address issues not previously addressed in the referenced documents. TVA analyzed in the EA the following relevant environmental issues associated with the proposed action (summarized below) and describes the potential environmental impacts under two storage scenarios: short-term storage up to 100 years and storage for an indefinite period.

Environmental Issue	**Impacts from Proposed ISFSI Short-Term Storage**	**Impacts from Proposed ISFSI Indefinite Storage**
Geology, Soils, & Seismicity	Small *(Moderate Cumulative Impacts)*	Small *(Moderate Cumulative Impacts)*
Floodplains	Small	Small
Water Use and Quality	Small	Small
Waste Management	Small *(Moderate Cumulative Impacts)*	Small *(Moderate Cumulative Impacts)*
Human Health (Radiological Concerns)	Small	Small
Postulated Accidents	Small	Small
Greenhouse Gas Emissions & Climate Change	Small	Small

On April 7, 2014, TVA issued a draft of the EA to the public for a 30-day review and comment period. One set of comments was received from the Tennessee Chapter of the Sierra Club, the Tennessee Environmental Council, the Bellefonte Efficiency and Sustainability Team/ Mothers Against Tennessee River Radiation, End Nuclear Dumping in Tennessee, and the Nuclear Information and Resource Service. TVA revised the EA to address the substantive comments provided.

Mitigation

No specific, nonroutine environmental commitments or mitigation measures are necessary to reduce potential environmental impacts. Use of standard plant practices for work planning will minimize both worker and public radioactive exposure and dose. Design and construction of an ISFSI at a TVA reactor site will fully conform to all applicable NRC regulatory design and licensing criteria:

- The dry cask storage haul path, pads, and support systems will be designed to adequately support the static and dynamic loads of the stored casks, considering potential amplification of earthquakes through soil-structure interaction, and soil liquefaction potential or other soil instability due to vibratory ground motion.

- All regulatory requirements for waste management—including requirements for treating radioactive materials in the form of both effluents and direct radiation, and requirements limiting offsite doses from the ISFSI during normal and anticipated occurrences—will be met.

- Reactor site parameters, including analyses of earthquake intensity and tornado missiles, will be enveloped by the cask design bases as documented in the applicable cask Certificate of Compliance and related NRC Safety Evaluation Report. Additional calculations may be performed as required by 10 CFR Part 72. Measures will be taken to protect the spent fuel against the design basis threat of radiological sabotage. In this regard, TVA will comply with all security orders issued after the September 11, 2001 terrorist attacks that relate to ISFSIs. The WBN ISFSI pads will also be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, lightning, hurricanes, floods, tsunami, and seiches, without impairing its capacity to perform safety functions.

In addition, TVA will implement a Storm Water Pollution Prevention Plan to address potential impacts to water resources from construction activities.

Conclusion and Findings

Based on the findings of the EA, TVA concludes that the proposed construction and operation of the ISFSI at Watts Bar Nuclear Plant is not a major federal action that would significantly affect the environment. Accordingly, an environmental impact statement is not required.

Charles P. Nicholson for ABH 16 June 2014

Amy B. Henry
Manager, NEPA Program and Valley Projects
Project Environmental Planning
Environment
Tennessee Valley Authority

Date Signed