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History of Watts Bar Unit 2 Reactivation

The Watts Bar Nuclear Power Plant (WBN) is located in southeastern Tennessee approximately 50 miles northeast of Chattanooga, and is owned by Tennessee Valley Authority (TVA). The site has two Westinghouse-designed pressurized water reactors. WBN Unit 1 received a full power operating license in early 1996, and is presently the last power reactor to be licensed in the United States. TVA has not completed construction of WBN Unit 2.

WBN Units 1 and 2 have a unique licensing history and regulatory framework. TVA received a construction permit for each unit in 1973 under 10 CFR Part 50. Construction proceeded until 1985, when WBN Unit 1 was thought to be essentially complete and nearly ready to receive an operating license (OL), as documented in NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2," through Supplement 4.

As a consequence of the identification of a large number of deficiencies shortly before the WBN Unit 1 license was expected to be issued, the Nuclear Regulatory Commission (NRC) sent a letter to TVA on September 17, 1985, requesting information under 10 CFR 50.54(f), on TVA's plans to address the deficiencies for its operating and construction activities at Watts Bar and TVA's other nuclear facilities. In response to this letter, TVA developed a Nuclear Performance Plan (NPP) to address corporate and site-specific issues, establishing programs to address a wide variety of material, design, and programmatic deficiencies. WBN Unit 2 construction was suspended at about that time, with major structures in place and equipment such as reactor coolant system piping installed. On October 13, 1999, TVA filed a request for extension of the completion date for Unit 2, and by letter dated July 14, 2000, TVA informed the NRC that WBN Unit 2 meets the NRC's definition for deferred nuclear plant units as described in the Commission's Policy Statement on Deferred Plants, 52 FR 38077 (Oct. 14, 1987). On October 24, 2000, the NRC issued an order extending the Unit 2 construction permit to December 31, 2010.

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The NRC staff reviewed components of the NPP for WBN Unit 1 and, as documented in NUREG-1232, Volume 4, "Safety Evaluation Report on Tennessee Valley Authority: Watts Bar Nuclear Performance Plan, Watts Bar Unit 1" (January 1990), the staff endorsed the general approaches of various corrective actions. The staff determined that when implemented thoroughly, the proposed corrective actions should address the identified deficiencies for Unit 1; however, no conclusions were stated for WBN Unit 2.

TVA addressed WBN Unit 1 construction quality issues as part of the implementation of its NPP. Inspection Manual Chapter (IMC) 2512, "Light Water Reactor Inspection Program – Construction Phase," was used to ensure that WBN Unit 1 was constructed in accordance with NRC-approved design and construction standards. In 1985, the NRC had completed its initial IMC 2512 inspection program for the construction of WBN Unit 1. However, the initial WBN inspection program was found to have some weaknesses, which were identified and corrected after the construction inspection program was completed for Unit 1, but before the facility was licensed. Because of the complexity of the rework activities under the NPP, the NRC implemented a "reconstitution" of the construction inspection program to verify that construction-related inspections conducted after 1985 met the requirements of the IMC 2512 program. The results of this program were published in NUREG-1528, "Reconstitution of the Manual Chapter 2512 Construction Inspection Program for Watts Bar Unit 1." Simultaneously, the staff had completed a substantial number of IMC 2512

inspections for WBN Unit 2, as well; however, TVA suspended WBN Unit 2 construction before the inspection program was completed, and the staff then suspended its licensing and inspection activities.

Satisfactory resolution of NPP topics for WBN Unit 1 is documented in the later supplements of NUREG-0847, with Supplement 19 supporting issuance of the low power license for WBN Unit 1 in November 1995, and Supplement 20 supporting issuance of the full power license for WBN Unit 1 in February 1996. These supplements concluded that WBN Unit 1 met applicable regulations and guidance; however, no conclusions were stated for WBN Unit 2.

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TVA informed the NRC in a November 14, 2006, letter of its intent to perform a study of the feasibility of completing WBN Unit 2, with the goal of producing power from the reactor in 2013.

Results of this study were presented to the TVA Board of Directors in August 2007. The Board decided to resume construction of Unit 2 and TVA notified 120 days in advance the Director of the Office of Nuclear Reactor Regulation (NRR) in accordance with the Commission Policy Statement on Deferred Plants via letter dated August 3, 2007.

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On March 4, 2009, TVA provided an update to its original operating license application dated June 30, 1976, as supplemented September 15, 1976. Following the requirements in 10 CFR 50.43, the NRC noticed the receipt of updated operating license application in the *Federal Register* and in the local newspapers. The Governor of the State of Tennessee was notified by letter dated April 9, 2009, of the update to the operating license application.

The NRC review of the operating license application is in progress.

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