



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

March 4, 2009

10 CFR 50.30  
10 CFR 50.33  
10 CFR 50.34  
10 CFR 50.40

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Stop: OWFN P1-35  
Washington, D.C. 20555-0001

In the Matter of )  
Tennessee Valley Authority )

Docket No. 50-391

**WATTS BAR NUCLEAR PLANT (WBN) UNIT 2 - OPERATING LICENSE APPLICATION UPDATE**

In References 1 and 2, TVA requested NRC authorization to operate WBN Units 1 and 2 for a period of 40 years at power levels up to 3,411 MWt. In Reference 3, TVA notified the NRC of its intention to complete construction activities at WBN Unit 2 and request an operating license (OL), pursuant to 10 CFR Part 50 on or before April 1, 2012. The purpose of this submittal is to provide an update of TVA's OL application.

Section 50.33 of 10 CFR Part 50 specifies the general information required to be contained in an application for an OL. 10 CFR §50.33 (f) requires TVA to provide information to demonstrate its financial qualification. This information is contained in the annual reports TVA files with the Securities and Exchange Commission. TVA's 2008 annual report is available at the following URL:

[http://www.tva.gov/finance/reports/forwardlooking\\_sec.htm](http://www.tva.gov/finance/reports/forwardlooking_sec.htm)

10 CFR §50.33 (g) concerns Emergency Plans for state and local governments. The applicable plans are available at the WBN site.

10 CFR §50.33 (k) requires TVA provide a report, as described in 10 CFR 50.75, indicating how reasonable assurance will be provided that funds will be available for decommissioning the facility. Enclosure 1 provides the Decommissioning Report. A decommissioning trust fund will be established for WBN Unit 2 prior to fuel load.

DOBO  
WCR

Section 50.34 of 10 CFR Part 50 specifies the technical information required to be contained in an application for an OL. 10 CFR §50.34 (b) requires that an application for an OL include a final safety analysis report (FSAR) that includes information that describes the facility, presents the design bases and the limits of its operation, and presents a safety analysis of the structures, systems, and components and of the facility as a whole. In Reference 4, TVA submitted an update to the WBN Unit 2 FSAR. TVA intends to submit periodic updates to the FSAR during 2009 as engineering is completed.

FSAR Chapter 13 provides information on TVA's organizational structure by reference to the TVA Topical Report, TVA-NPOD89, *Nuclear Power Plant Description*. This topical report is applicable to WBN Unit 2. At the time of fuel load and beyond, the Site Vice President will be accountable for activities at the site, including WBN Unit 2. The latest revision of the report was provided in Reference 5.

FSAR Chapter 13 provides information on TVA's quality assurance plan by reference to the Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A. This plan is applicable to WBN Unit 2. At fuel load, Appendix F, which currently provides the WBN Unit 2 Construction Completion Project Organization, will be removed and WBN Unit 2 activities will be addressed consistent with TVA's other operating units. The latest revision of the plan was provided in Reference 6. Section 50.40 requires that TVA be technically qualified to engage in the proposed activities. In addition to the Nuclear Quality Assurance Plan, personnel qualification requirements are provided in the WBN Unit 2 FSAR Chapter 13.

The TVA Radiological Emergency Plan (REP) has been developed to provide protective measures for TVA personnel and to protect the health and safety of the public in the event of a radiological emergency resulting from an accident at WBN. The REP contains site-specific appendices for each TVA plant. WBN's radiological emergency information is in Appendix C of the REP. A template of the WBN Appendix C is provided. The WBN Unit 2 specific data and references provided are preliminary; final verification will be provided as part of the construction completion of WBN Unit 2. REP Appendix E provides references to the applicable state radiological emergency response plans.

Proposed Technical Specifications (TS) and a proposed Technical Requirements Manual (TRM) are discussed in Enclosure 2. Templates of the WBN Unit 2 TS and TRM are provided. TVA used the WBN Unit 1 TS and TRM to develop the proposed templates of the WBN Unit 2 TS and TRM. The numbers, setpoints, and parameters provided are preliminary in nature; final verification will be provided as part of the construction completion of WBN Unit 2.

TVA will use the established Operator Training and Requalification Program in place for WBN Unit 1 for WBN Unit 2, supplemented with training on unit differences. The licensed operator requalification program was reviewed by NRC in Reference 7.

The Physical Security Plan and Safeguards Contingency Plan exist and do not require change for the completion and operation of WBN Unit 2. The latest revision of the plan was provided in Reference 8. TVA understands NRC will review the current plans taking WBN Unit 2 into account.

Applicable Three Mile Island (TMI)-related requirements were reviewed and their current status provided in Reference 9. NRC documented its review of the status of TMI-related requirements in Reference 10.

Section 50.30(f) of 10 CFR Part 50 requires an environmental report be submitted along with an application for an OL. The WBN Unit 2 Final Supplemental Environmental Impact Statement (FSEIS) for the Completion and Operation of WBN Unit 2 (June 2007) was submitted to NRC on February 15, 2008 (Reference 11). NRC requested additional information by letter dated June 3, 2008 (Reference 12). By letter dated July 2, 2008 (Reference 13), TVA responded to the NRC request for additional information and provided an open action required for licensing. TVA committed to submit by January 30, 2009, a WBN Unit 2 Severe Accident Management Alternatives (SAMA) analysis consistent in scope and content with the SAMA analyses provided in support of recent license renewal applications. TVA submitted the SAMA analysis by letter dated January 27, 2009 (Reference 14).

The FSEIS supplements TVA's original 1972 "Final Environmental Statement, Watts Bar Nuclear Plant Units 1 and 2" (1972 FES) and updates subsequent related documents identified below. In December 1978, NRC issued a "Final Environmental Statement Related to the Operation of Watts Bar Nuclear Plant Units 1 and 2, NUREG-0498" (1978 NRC FES-OL). This environmental review dealt with the impacts of operation of WBN Units 1 and 2.

In 1993, TVA conducted a review of the TVA and NRC documents to determine whether an additional environmental review was needed to inform decision makers about whether to complete both units and concluded that neither plant design nor environmental considerations had changed in a manner that materially altered the environmental impact analysis set forth in its 1972 FES. In 1994, NRC requested TVA provide updated environmental information in accordance with 10 CFR 51.92 to determine if it was necessary to issue a supplement to the 1978 NRC FES-OL. TVA provided additional analyses and information in support of NRC's "Final Environmental Statement Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2, NUREG-0498 Supplement 1," for the operation of WBN Units 1 and 2, which was issued in April 1995. The NRC concluded that there were no significant changes in the environmental impacts since the 1978 NRC FES-OL from changes in plant design, proposed methods of operation, or changes in the environment. Following an independent review of NRC's analyses and a new analysis of the need for additional power, TVA adopted NRC's 1995 FES in July 1995.


U.S. Nuclear Regulatory Commission  
Page 4  
March 4, 2009

Enclosure 3 provides the listing of open actions required for licensing made in this letter.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 4<sup>th</sup> day of March, 2009.

If you have any questions, please contact me at (423) 365-2351.

Sincerely,

  
Masoud Bajestani  
Watts Bar Unit 2 Vice President

Enclosures  
cc: See page 6

**Document Components:**

001 REP APP C r88\_2\_2-5-09 2,700,000 bytes  
002 Proposed TS and TS Bases 17,300,000 bytes  
003 Proposed TRM and TRM Bases 6,500,000 bytes  
004 Review Matrix 426,000 bytes  
005 Developmental Information 71,000,000 bytes

References:

1. TVA letter dated June 30, 1976, from T. Graham Wells to Benard C. Rusche, NRC
2. TVA letter dated September 27, 1976, from J. E. Gilleland to Roger S. Boyd, NRC (761004B0199)
3. TVA letter dated August 3, 2007, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Reactivation of Construction Activities" (T90 070803 001)
4. TVA letter dated December 18, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Safety Analysis Report (FSAR), Amendment 92" (T02 081218 001)
5. TVA letter dated August 29, 2008, "TVA Nuclear Quality Assurance (NQA) Plan (TVA-NQA-PLN89-A) and Organizational Topical Report (TVA-NPOD89-A) - Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants - Annual Update" (L44 080828 019)
6. TVA letter dated December 5, 2008, "Browns Ferry Nuclear Plant (BFN) Units 1, 2 and 3, Sequoyah Nuclear Plant (SQN) Units 1 and 2, and Watts Bar Nuclear Plant (WBN) Unit 1 and 2 - TVA's Nuclear Quality Assurance (NQA) Plan (TVA-NQA-PLN89-A)" (L44 081205 001)
7. NRC letter dated February 12, 2009, "Watts Bar Nuclear Plant- NRC Integrated Inspection Report 05000390/2008005, 05000391/2008005 and 05000390/2008501 and Exercise of Enforcement Discretion" (L44 090225 004)
8. TVA letter dated February 27, 2008, "Watts Bar Nuclear Plant (WBN) Unit 1 and 2 - Security, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 7" (T04 080227 857)
9. TVA letter dated March 20, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Generic Communications Status for Unit 2-Restructured Tables" (T02 080320 001)
10. NRC letter dated May 28, 2008, "Watts Bar Nuclear Plant, Unit 2 - Status of Generic Communications for Review (TAC NO. MD8314)" (T02 080604 001)
11. TVA letter dated February 15, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Supplemental Environmental Impact Statement for the Completion and Operation of Unit 2" (T02 080215 001)
12. NRC letter dated June 3, 2008, "Watts Bar Nuclear Plant, Unit 2 - Request for Supplemental Information for Review of Supplemental Environmental Statement (TAC MD8203)" (A02 080606 002)
13. TVA letter dated July 2, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Supplemental Environmental Impact Statement - Request for Additional Information (TAC MD8203)" (T02 080702 003)

U.S. Nuclear Regulatory Commission  
Page 6  
March 4, 2009

14. TVA letter dated January 27, 2009, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Supplemental Environmental Impact Statement - Severe Accident Management Alternatives (TAC MD8203)" (T02 090127 001)

cc (Enclosures):

Lakshminarasimh Raghavan  
U.S. Nuclear Regulatory Commission  
MS 08H4A  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852-2738

Patrick D. Milano, Senior Project Manager  
U.S. Nuclear Regulatory Commission  
MS 08H4  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852-2738

Loren R. Plisco, Deputy Regional Administrator for Construction  
U. S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303-8931

U. S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303-8931

NRC Resident Inspector Unit 2  
Watts Bar Nuclear Plant  
1260 Nuclear Plant Road  
Spring City, Tennessee 37381

Enclosure 1  
WBN Unit 2 Decommissioning Report

Pursuant to the requirements of 10 CFR §50.33(k)(1), an application for an operating license (OL) or combined license for a production or utilization facility will contain information in the form of a report, as described in 10 CFR §50.75, indicating how reasonable assurance will be provided that funds will be available to decommission the facility.

10 CFR §50.75(b) requires that each power reactor applicant for or holder of an OL and each applicant for a combined license under subpart C of 10 CFR part 52 for a production or utilization facility of the type and power level specified in 10 CFR §50.75 (c) shall submit a decommissioning report, as required by §50.33(k).

- (1) For an applicant for or holder of an OL under part 50, the report must contain a certification that financial assurance for decommissioning will be (for a license applicant) provided in an amount which may be more, but not less, than the amount stated in the table in 10 CFR §50.75(c)(1) adjusted using a rate at least equal to that stated in paragraph 10 CFR §50.75(c)(2).
- (2) The amount to be provided must be adjusted annually using a rate at least equal to that stated in 10 CFR §50.75(c)(2).
- (3) The amount must use one or more of the methods described in 10 CFR §50.75(e) as acceptable to the NRC.
- (4) The amount stated in the applicant's certification may be based on a cost estimate for decommissioning the facility. As part of the certification, a copy of the financial instrument obtained to satisfy the requirements of 10 CFR §50.75 (e) must be submitted to the NRC.

10 CFR §50.75(c) provides the minimum amounts (January 1986 dollars) required to demonstrate reasonable assurance of funds for decommissioning by reactor type and power level and an adjustment factor to account for escalation of labor, energy, and waste burial costs. (Amounts are based on activities related to the definition of "decommission" in 10 CFR §50.2 and do not include the cost of removal and disposal of spent fuel, nonradioactive structures, or materials beyond that necessary to terminate the license.)

For a pressurized water reactor (PWR) with a core thermal power rating of greater than or equal to 3,400 MWt, such as the WBN Unit 2 reactor design, 10 CFR §50.75(c)(1)(i) specifies the minimum amount required to demonstrate reasonable assurance of funds for decommissioning as \$105 million (1986 dollars). This amount is subject to an adjustment factor at least equal to  $0.65 L + 0.13 E + 0.22 B$ , where L and E are escalation factors for labor and energy, respectively, and are to be taken from regional data of U.S. Department of Labor Bureau of Labor Statistics (BLS), and B is an escalation factor for waste burial and is to be taken from NRC report NUREG-1307, "Report on Waste Burial Charges."

## WBN UNIT 2 DECOMMISSIONING COST ESTIMATE

The WBN plant is a two-unit PWR (Units 1 and 2) facility with nuclear steam supply systems designed by Westinghouse Electric Corporation. WBN Unit 2 has a thermal power rating of 3,411 MWt. In accordance with 10 CFR §50.75(c), and using NUREG-1307, Revision 13, the minimum funding is computed on a per-unit basis, as follows (in 2008 dollars):

$$\text{Minimum Funding} = \$105 \text{ million } [0.65(L) + 0.13(E) + 0.22(B)]$$

$L = 2.16$  (from BLS Employment Cost Index (ECI) – December 2008, Table 6, South Region), and computed as follows:  $(109.3 \times 1.98)/100$ ; where 109.3 is the December 2008 ECI for the South Region, 1.98 is the base Labor Adjustment Factor for December 2005 (from NUREG-1307, Table 3.2).  $(109.3 \times 1.98)/100 = 2.16414 = 2.16$

$$E = [(0.58 \times P_x) + (0.42 \times F_x)]$$

$$P_x = 190.6 \text{ (from BLS December 2008 Preliminary data)} \div 114.2 \text{ (January 1986 reference value)} = 1.669$$

$$F_x = 165.5 \text{ (from BLS December 2008 Preliminary data)} \div 82.0 \text{ (January 1986 reference value)} = 2.018$$

$$E = [0.58 (1.669) + 0.42 (2.018)] = 0.96802 + 0.84756 = 1.81558 = 1.816$$

$B = 9.872$  (from NUREG-1307 Table 2.1 for a PWR, Generic Low-Level Waste Disposal Site, Direct Disposal with Vendors)

$$\text{Minimum Funding} = \$105 \text{ million } [0.65 (2.16) + 0.13 (1.816) + 0.22 (9.872)]$$

$$\text{Minimum Funding} = \$105 \text{ million } [1.404 + 0.23608 + 2.17184]$$

$$\text{Minimum Funding} = \$105 \text{ million } [3.81192]$$

Minimum Funding = \$400.3 million (2008 dollars) for WBN Unit 2

This funding calculation is updated annually using the adjustment factor formula described in 10 CFR §50.75(c)(2).

### WBN Unit 2 Decommissioning Funding Mechanism

TVA currently has a Master Decommissioning Trust Agreement in place with The Bank of New York Mellon Corporation serving as Trustee. This Agreement establishes separate Funds under a Master Trust which provides financial assurance for the decommissioning of the existing operating plants owned and operated by TVA. It currently provides Funds for Browns Ferry Unit 1, Browns Ferry Unit 2, Browns Ferry Unit 3, Sequoyah Unit 1, Sequoyah Unit 2; and Watts Bar Unit 1. The decommissioning funding status for these existing operating plants is reported to the NRC every two years;



the most recent reporting was March 28, 2007 (Reference 1). Any changes to this Master Decommissioning Trust Agreement are also provided to the NRC as a part of the status reporting. The requirements of 10 CFR §50.75 will continue to be satisfied through this Master Decommissioning Trust Agreement.

Consistent with this current practice and pursuant to 10 CFR §50.75(e)(1), a Fund will be established within the Master Decommissioning Trust Agreement for Watts Bar Unit 2 prior to fuel load.

#### Decommissioning Costs and Funding – Status Reporting

In accordance with 10 CFR §50.75(f)(2), TVA will periodically report on the status of decommissioning funding for WBN Unit 2.

#### Recordkeeping Plans Related to Decommissioning Funding

In accordance with 10 CFR §50.75(g), TVA will retain records, until the termination of the license, of information important to safe and effective decommissioning.

#### REFERENCE:

1. Tennessee Valley Authority, "Decommissioning Funding Status Report – Browns Ferry (BFN), Sequoyah (SQN), and Watts Bar (WBN) Nuclear Plants," dated March 28, 2007 [ADAMS Accession No. ML071170573] (L44 070328 001)

Enclosure 2  
Proposed Technical Specifications  
And Technical Requirements Manual

- References:
1. NRC Staff Requirements Memorandum SECY-07-0096, dated July 25, 2007, "Possible Reactivation of Construction and Licensing Activities for the Watts Bar Nuclear Plant Unit 2"
  2. TVA letter dated August 27, 1992, "Watts Bar Nuclear Plant (WBN) Unit 1 - Proposed Technical Specifications (TS)" (T04 920827 975)

As previously directed in the NRC staff requirements memorandum SECY-07-0096 (Reference 1), the current licensing basis for WBN Unit 1 will be used as the reference basis for the review and licensing of WBN Unit 2.

When TVA submitted proposed Technical Specifications (TS) for WBN Unit 1 on August 27, 1992 (Reference 2), it noted that the package contained a markup of the draft of NUREG-1431 (Standard Technical Specifications Westinghouse Plants).

Chapter 16 (Technical Specifications) of NUREG-0800 (Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants) specifies reviews required of proposed TSs. To help facilitate the required reviews, the proposed WBN Unit 2 TS and TS Bases were developed by marking up Revision 0 of NUREG-1431 to indicate the WBN Unit 1 TS and TS Bases approved (as appropriate) through Amendment 70 and Revision 91, respectively. A review matrix was also developed that indicated, for each TS and TS Bases subsection, the amendments and revisions that applied to that subsection. Where applicable, this review matrix also indicates those amendments / revisions that will not be applied to Unit 2.

Attachment 002 contains the proposed template for the WBN Unit 2 TS and TS Bases. The numbers, setpoints, and parameters provided are preliminary in nature. Verification of these items will be provided during the certification stage of the TS process.

Attachment 004 contains the review matrix that shows the result of the review of Revision 0 of NUREG-1431 and the proposed WBN Unit 2 TS and TS Bases.

Attachment 005 contains the markup of Revision 0 of NUREG-1431 to reflect WBN Unit 2 specific changes. For ease of review, each subsection consists of the applicable portions of the TS and TS Bases preceded by the applicable excerpt of the review matrix.

The proposed WBN Unit 2 Technical Requirements Manual (TRM) and Bases were developed by marking up the photo-ready version for WBN Unit 1 to indicate the WBN Unit 1 TRM and TRM Bases approved (as appropriate) through Revision 44. A review matrix was also developed that indicated, for each TRM and TRM Bases subsection, the revisions that applied to that subsection. Where applicable, this review matrix also indicates those revisions that will not be applied to Unit 2.

Attachment 003 contains the proposed template for the WBN Unit 2 TRM and TRM Bases. The numbers, setpoints, and parameters provided are preliminary in nature. Verification of these items will be provided during the certification stage of the TRM process.

Attachment 004 contains the review matrix that shows the result of the review of the photo-ready version of the WBN Unit 1 TRM and TRM Bases and the proposed WBN Unit 2 TRM and TRM Bases.

Attachment 005 contains the markup of the photo-ready version of the WBN Unit 1 TRM and TRM Bases to reflect WBN Unit 2 specific changes. For ease of review, each subsection consists of the applicable portions of the TRM and TRM Bases preceded by the applicable excerpt of the review matrix.

Enclosure 3  
Open Actions Required for Licensing

1. A decommissioning trust fund will be established for WBN Unit 2 prior to fuel load.