

POLICY ISSUE NOTATION VOTE

June 7, 2007

SECY-07-0096

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations

SUBJECT: POSSIBLE REACTIVATION OF CONSTRUCTION AND LICENSING
ACTIVITIES FOR THE WATTS BAR NUCLEAR PLANT UNIT 2

PURPOSE:

This paper seeks Commission approval of the staff's approach for possible reactivation of construction, licensing, and inspection activities for the Watts Bar Nuclear Plant (WBN), Unit 2.

SUMMARY

The paper describes how the staff plans to implement existing Commission policy regarding reactivation of deferred plants and environmental reviews for the Tennessee Valley Authority's (TVA) WBN Unit 2 facility, and how the staff plans to conduct inspections if TVA proceeds with the project. Separately, the Office of the General Counsel (OGC) is addressing options for public participation in licensing activities if TVA decides to proceed with this project.

BACKGROUND:

The Watts Bar Nuclear Plant is located in southeastern Tennessee approximately 50 miles northeast of Chattanooga, and is owned by TVA. The site has two Westinghouse-designed pressurized water reactors. WBN Unit 1 received a full power operating license (OL) 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.

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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 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.

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.

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 are to be presented to the TVA Board of Directors in August 2007. If the Board decides to resume construction, TVA plans to notify the Director of the Office of Nuclear Reactor Regulation (NRR) 120 days in advance, in accordance with the Commission Policy Statement on Deferred Plants. The Policy Statement describes the information to be provided by a licensee when a project is being reactivated, and staff actions when notified of reactivation. The information requested includes schedules for resuming and completing construction, current facility status, and a description of outstanding licensing issues, including any new requirements applicable to the plant. The Policy Statement also sets an expectation that reactivation of construction of a facility such as WBN Unit 2 will be subject to all applicable current regulations, standards, policies, and guidance.

In a letter dated April 3, 2007, TVA stated two key assumptions associated with possible reactivation of WBN Unit 2. The assumptions are that if the TVA Board of Directors authorizes reactivation of construction:

- (1) "TVA intends to complete this project and request an Operating License pursuant to 10 CFR Part 50. The project will continue to use the existing Part 50 construction permit and the largely completed, well documented operating license review framework;" and
- (2) "TVA would rely on the docket record that supports Unit 2 as well as Unit 1, and the extensive Unit 1 licensing basis that was successfully implemented, to close out any remaining construction issues for WBN Unit 2."

TVA's rationale for the above assumptions is that WBN Unit 2 is of the same vintage as WBN Unit 1 and that the reactors' licensing and design basis would be essentially the same. TVA states that the majority of WBN Unit 2 licensing issues have been resolved as reflected in NUREG-0847 and its supplements related to the operation of WBN Units 1 and 2, which were based on the 1981 version of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants." TVA believes these reviews are adequate to support WBN Unit 2 licensing. TVA also states that construction deficiencies will be resolved consistent with NUREG-1232, Volume 4.

The April 3, 2007, letter also identifies three outstanding licensing issues for WBN Unit 2:

- the pre-service inspection program;
- WBN Unit 2 pressure/temperature limits; and
- essential raw cooling water for two-unit operation.

TVA indicated that it intends to rely on the existing docket record that supports both Unit 1 and Unit 2, as well as the approved licensing basis for Unit 1, and that it will close out any remaining construction issues for Unit 2. Further, TVA expressed concern that apart from the three issues identified in its April 3, 2007, letter, any "[c]hanges that extend beyond what the NRC already

has approved for Unit 1, and which would result in significant modifications to Unit 2 structures, systems and components . . . would have a significant impact on TVA's decision whether to reactivate construction on Unit 2."

DISCUSSION:

The staff's initial assessment of the WBN Unit 2 licensing process has identified two areas for which Commission approval is requested. These areas include the issues identified by TVA. The first area is the licensing approach that will be followed, including application of the Commission Policy Statement on Deferred Plants, and the execution of NRC and TVA responsibilities under the National Environmental Policy Act (NEPA); the second area is the staff's development of an inspection program focused on WBN Unit 2.

Licensing Approach

The staff requests Commission approval of the overall licensing approach as described below.

Applicable Regulations and Office Responsibilities

The staff will conduct its licensing review of WBN Unit 2 under 10 CFR Part 50. The unit has a current construction permit, presently scheduled to expire in 2010. NRR is responsible for licensing facilities under 10 CFR Part 50, and will be responsible for the licensing review of WBN Unit 2. (The Office of New Reactors (NRO) is responsible for licensing new reactors under 10 CFR Part 52, and will not oversee the WBN Unit 2 application review.) Region II will be responsible for inspection of WBN Unit 2 construction, with assistance from NRR. These responsibilities are consistent with SECY-06-0144, "Proposed Reorganization of the Office of Nuclear Reactor Regulation and Region II," June 24, 2006.

Application of Commission Policy Statement on Deferred Plants

The staff plans to implement the Commission Policy Statement on Deferred Plants in its review of the WBN Unit 2 reactivation and OL application. The Policy Statement sets an expectation that reactivation of construction of a facility such as WBN Unit 2 will be subject to all applicable current regulations, standards, policies, and guidance. Items that do not meet current regulatory criteria will be evaluated on a case-by-case basis, with appropriate consideration of backfit issues. The staff will also consider the commonality of various attributes of WBN Units 1 and 2 in its assessments, in the course of its review.

In its April 3, 2007 letter, TVA states that WBN Unit 2 is of the same vintage and that it will be virtually identical to WBN Unit 1. The letter states, "WBN Unit 2 licensing and design basis would be essentially the same as what presently (emphasis added) exists for WBN Unit 1." The letter indicated that, ". . . the majority of WBN Unit 2 licensing issues have been resolved as reflected in the Safety Evaluation Report (SER) and its supplements related to the operation of WBN Units 1 and 2 (NUREG-0847)." It is the staff's understanding that TVA believes that the current docket record supports both the WBN Unit 1 and the WBN Unit 2 licensing basis and will be adequate to close out any remaining licensing and construction issues, with only the three exceptions identified in TVA's April 3, 2007, letter. TVA does not explicitly commit to meeting current regulatory requirements; rather, TVA seems to indicate that it will meet the

licensing basis for Unit 1, which was licensed 12 years ago. If this is TVA's intent, the staff does not agree with TVA's position; nor does the staff agree with TVA's view of the state of the current docket record.

While NUREG-0847 and its Supplements 1 through 4 documented reviews for both units, Supplements 5 through 20 often documented only WBN Unit 1's compliance with applicable regulations. Similarly, NUREG-1232, Volume 4, and NUREG-1528 documented staff review of NPP and inspection issues, respectively, only for WBN Unit 1. Therefore, additional review is necessary to support the licensing of WBN Unit 2.

Further, consistent with the Policy Statement, TVA will be expected to submit information describing the remaining licensing issues that must be closed for WBN Unit 2. TVA would also be expected to address the impact of new regulatory requirements, and to identify any changes to the information that was previously reviewed and demonstrate how those changes meet current regulatory requirements.

The staff will review TVA's submittal to determine the applicability of previous reviews and changes proposed by TVA, to confirm the scope of remaining issues and ensure that appropriate safety standards are maintained to support WBN Unit 2 licensing. If a previously reviewed item is found to meet current requirements and criteria, no further review will be conducted. Items that do not meet current requirements and criteria will be evaluated on a case-by-case basis, with appropriate consideration of backfit issues.

The staff plans to use the latest version of NUREG-0800 for its assessment, since this version incorporates current requirements and criteria, including resolution of generic issues and communications. If cases are identified where the current standard review plan (SRP) addresses requirements or criteria are not applicable to WBN Unit 2 (e.g., Appendix S of 10 CFR 50), the staff will refer to previous versions for guidance. The staff will also consider any alternative approaches to meeting regulatory requirements that may be proposed by TVA.

For WBN Unit 2 licensing topics that have not been previously reviewed, TVA will need to address these topics in supplements to the Unit 2 license application. The staff expects TVA to provide information to support an evaluation of each topic demonstrating that appropriate regulatory criteria have been satisfied.

TVA has expressed an interest in WBN Units 1 and 2 having the same licensing basis. Consistent with that objective, TVA will need to identify any proposed changes to WBN Unit 2 based on the changes which have been made to the WBN Unit 1 licensing and design basis including any license amendments or 10 CFR 50.59 changes.

The expected significant similarity between WBN Units 1 and 2 may assist TVA in demonstrating compliance with regulatory requirements, and may result in a more efficient licensing and inspection effort by NRC. For example, many issues were reviewed in NUREG-0847 and its supplements for WBN Units 1 and 2, and many of these reviews may be applicable to WBN Unit 2. TVA should be able to demonstrate that various NPP corrective actions are applicable to WBN Unit 2, as well. However, the staff anticipates that some differences may exist between the two units due to changes in regulatory requirements and criteria between the

time WBN Unit 1 was licensed and the completion of WBN Unit 2 licensing. These differences will be addressed on a case-by-case basis.

Environmental Reviews

Consistent with its responsibilities as a Federal agency under NEPA, TVA has prepared a supplemental environmental impact statement (EIS) in anticipation of possible resumption of WBN Unit 2 construction.

The NRC staff will prepare its own EIS in accordance with 10 CFR Part 51 if TVA pursues licensing of WBN Unit 2, based on long-standing Commission policy regarding TVA applications. Under this approach, the staff conducts a comprehensive interdisciplinary study, a cost-benefit analysis, and a weighing of alternatives as prescribed by the NEPA. The staff has applied this policy to significant TVA licensing actions many times over the years, including the licensing of WBN Unit 1 in 1995, evaluation of tritium production at Watts Bar in 2002, and license renewal for Browns Ferry in 2006.

This policy originated in the early 1970s. On June 15, 1973, the NRC's predecessor, the Atomic Energy Commission (AEC), entered into an agreement with TVA (letter from L. M. Muntzing, AEC, to L. Seeber, TVA, countersigned by L. Seeber on July 3, 1973) to ensure that the AEC would fulfill its NEPA responsibilities. The AEC and the TVA agreed that: (1) TVA would submit an environmental (impact) statement (ES) concurrent with its application; (2) the ES would be treated as an Environmental Report (ER) and judged for its adequacy in accordance with the appropriate Commission regulations and regulatory guidance; and (3) the AEC would prepare an independent ES. This practice evolved from the 1971 agreement between TVA and the AEC (June 30, 1971, letter from H. L. Price, AEC, to J. E. Watson, TVA) that allowed the AEC to act as a cooperating agency on TVA environmental statements. In the original licensing proceeding for Browns Ferry, the differing roles of and decisions to be made by a regulatory agency versus an entrepreneurial agency were identified, leading to the 1973 agreement to ensure that both agencies would fulfill their separate NEPA responsibilities.

Inspection Program Activities

The staff requests Commission approval of the overall inspection approach as described below.

The staff is planning to reactivate IMC 2512, IMC 2513, "Light Water Reactor Inspection Program - Pre-operational Testing Phase," and IMC 2514, "Light Water Reactor Inspection Program - Startup Testing Phase," and the associated Inspection Procedures, for use at WBN Unit 2, if TVA reactivates its OL application. A separate IMC is being considered to address any additional oversight items needed during construction and testing. The construction inspection record for WBN Unit 2 will be reconciled with IMC 2512 to determine the scope of inspection needed to verify satisfactory completion of construction. The construction inspection record and allegations for WBN Unit 1 will also be reviewed to determine applicability to WBN Unit 2, and to determine if additional closeout inspections are needed.

COMMITMENTS:

The staff will keep the Commission informed of the status of its review and will request Commission approval of any changes to the approaches described in this paper.

RECOMMENDATIONS:

The staff recommends Commission approval of the following areas supporting licensing and inspection of WBN Unit 2, if TVA reactivates its OL application:

1. The staff will complete licensing under 10 CFR Part 50, implementing the Commission Policy Statement on Deferred Plants and establish processes for environmental reviews for TVA facilities. The staff will:
 - a. Expect TVA to provide the information requested by the Commission Policy Statement on Deferred Plants, including identification of all remaining licensing issues, changes to previously reviewed information, and proposed resolution of these issues.
 - b. Determine the applicability of previous reviews completed for WBN Units 1 and 2, using current regulations, standards, policies and guidance. Items that do not meet current requirements and criteria will be evaluated on a case-by-case basis, with appropriate consideration of backfit issues.
 - c. Use the current version of NUREG-0800 for its assessment. If cases are identified where the current SRP addresses regulatory requirements or criteria not applicable to WBN Unit 2, the staff will refer to previous versions for guidance. The staff will also consider any alternative approaches to meeting regulatory requirements that may be proposed by TVA.
 - d. Expect TVA to evaluate NUREG-1232, Volume 4 for its applicability to Unit 2 and propose appropriate corrective actions for Unit 2.
 - e. Prepare an EIS to support a WBN Unit 2 licensing decision.
2. The staff will develop an inspection program for WBN Unit 2, including reactivation of IMCs 2512, 2513, and 2514, and reconstitution of the construction inspection program previously completed for WBN Unit 2. Procedures will be developed to address any additional oversight issues identified during construction and testing.

The staff plans to communicate the Commission's decision to TVA as soon as it is available so that TVA can consider this information in deciding whether to reactivate WBN Unit 2 construction and the WBN Unit 2 OL application.

RESOURCES:

The staff has allocated 3.5 full-time equivalents and \$200,000 for WBN Unit 2 licensing and inspection pre-application planning, review, and coordination in fiscal year (FY) 2007.

Resources for FY 2008 and FY 2009 will be addressed in the FY 2009 planning, budgeting, and performance monitoring process.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA/

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for Operations

Resources for FY 2008 and FY 2009 will be addressed in the FY 2009 planning, budgeting, and performance monitoring process.

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The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

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*concurred via email

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