OFFICE OF NUCLEAR REACTOR REGULATION

INITIAL ASSESSMENT OF SCOPE OF REMAINING REVIEW FOR

OPERATING LICENSING APPLICATION

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT UNIT 2

DOCKET NO. 50-391

## INTRODUCTION

The Tennessee Valley Authority (TVA) informed the Nuclear Regulatory Commission (NRC) in an August 3, 2007, letter of its intent to complete construction and licensing of the Watts Bar Nuclear Plant (WBN) Unit 2. TVA's letter also described its intent to align the licensing and design bases for WBN Units 1 and 2 to the fullest practical extent. TVA stated that it will complete WBN Unit 2 in compliance with applicable regulations, and that it will incorporate modifications made to WBN Unit 1 into the Unit 2 licensing and design bases.

This document describes the staff's initial assessment of the status of previous reviews completed for WBN Unit 2. In response to TVA's August 3, 2007, letter, the NRC staff has examined information provided by TVA and previously-completed NRC safety evaluations to reconstitute the status of remaining licensing issues. Topics that were not previously reviewed form part of the scope of the remaining licensing review effort. In addition, the assessment describes how the staff will determine if previously-reviewed topics may be re-opened under certain circumstances. The assessment also identifies where TVA needs to provide additional information to demonstrate how WBN Unit 2 will fulfill all regulatory requirements at the time it is licensed.

## BACKGROUND

WBN Unit 2 has a unique licensing history and regulatory framework. TVA received a construction permit for each unit in 1973 under Title 10 of the Code of Federal Regulations (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, as documented in NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2," through Supplement 4. The reviews completed through Supplement 4 applied to both WBN units.

As a consequence of the identification of a large number of deficiencies shortly before the WBN Unit 1 operating license was expected to be issued, the 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 WBN 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.

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. NUREG-1232, Volume 4 applied only to WBN Unit 1, so no conclusions were stated for WBN Unit 2.

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. Topics addressed in NUREG-0847 Supplements 5 through 20 often addressed both WBN Units 1 and 2, but sometimes addressed only WBN Unit 1.

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, October 14, 1987). On October 24, 2000, the NRC issued an order extending the Unit 2 construction permit to December 31, 2010.

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. Results of this study were presented to the TVA Board of Directors in August 2007. In an August 3, 2007, letter, TVA informed the NRC of the decision to resume licensing and construction activities. This information was provided in accordance with the Commission Policy Statement on Deferred Plants, which sets an expectation that certain information be provided to NRC 120 days before resuming construction. 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. TVA's August 3, 2007, letter addressed each of these requests, and included commitments to provide additional details at a later date.

In anticipation of TVA's decision to complete WBN Unit 2, the NRC staff reviewed the Commission Policy Statement on Deferred Plants and the WBN Unit 2 regulatory history to develop recommendations for how to complete the licensing review. This effort was summarized in a Commission paper, SECY-07-0096, "Possible Reactivation of Construction and Licensing for the Watts Bar Nuclear Plant Unit 2," June 7, 2007.

On July 25, 2007, the Commission issued a Staff Requirements Memorandum (SRM) based on SECY 07-0096. The SRM directed the NRC staff to use the current licensing basis for WBN Unit 1 as the reference basis for the review and licensing of WBN Unit 2. The Commission stated that significant changes to this licensing approach would be allowed where the existing backfit rule would be met or as necessary to support dual unit operation. The Commission also expected TVA to review any exemptions, reliefs, and other actions that were specifically granted

for Unit 1, to determine whether the same allowance is appropriate for Unit 2 and submit such requests to the NRC for its review and approval as necessary. Further, the Commission directed the NRC staff to encourage TVA to adopt updated standards for Unit 2 where it would not significantly detract from design and operational consistency between Units 1 and 2, and to take opportunities to resolve issues such as generic safety issues where the unirradiated state of WBN Unit 2 would make the issue easier to resolve before plant operation.

In a letter dated October 23, 2007, the NRC staff described information needed to determine the status of the WBN Unit 2 operating license application review. This letter asked TVA to provide information in its planned submittals to describe how it plans to address the similarity between WBN Units 1 and 2, the effect of WBN Unit 2 operation on Unit 1, the effects of possible degradation of structures and components, and the applicability of NPP corrective action and special programs to Unit 2. TVA was also asked to provide dates for submittal of certain items discussed in its August 3, 2007, letter.

On January 29, 2008, TVA submitted its "Watts Bar Nuclear Plant (WBN) – Unit 2 - Regulatory Framework for the completion of Construction and Licensing Activities for Unit 2." This letter included responses to some of the issues raised by the NRC staff's letter of October 23, 2007. The letter also included tables describing TVA's position on the status of previously-completed reviews.

On March 13, 2008, TVA submitted a letter revising the regulatory framework tables to provide additional details regarding the status of specific topics and clarifying TVA's position regarding the status of review for those topics. TVA documented its position regarding the status of topics using these status codes:

> C: CLOSED: Previous staff review of NUREG-0847 and its supplements has closed the item either for both units at WBN or explicitly for WBN Unit 2.
>
> CI: CLOSED/IMPLEMENTATION: The NRC staff has approved the topic either for both units at WBN or explicitly for WBN Unit 2; there is no change to the approved design; and implementation verification is recommended through inspection.
>
> CT: CLOSED/TECHNICAL SPECIFICATIONS: Item has been approved either for both WBN units or explicitly for WBN Unit 2; however, a change to the original approval requires submittal of the Technical Specifications and additional staff review.
>
> O: OPEN: No action or documentation is provided that shows that the NRC staff has reviewed the topic for WBN Unit 2.
>
> OT: OPEN/TECHNICAL SPECIFICATIONS: No action or documentation is provided that shows the staff has reviewed the item for WBN Unit 2, and the resolution is through submittal of a Technical Specification.
>
> OV: OPEN/VALIDATION: The proposed approach has been approved for WBN Unit 1; the same approach is proposed for use on WBN Unit 2 without change.
>
> NA: NOT APPLICABLE. TVA's submittal included provided its reasoning for topics with this status code.

On September 7, 2007, TVA submitted two letters regarding generic communications. One letter described generic communications issued prior to 1995, while the other provided initial responses for WBN Unit 2 to Bulletins and Generic Letters (GLs) issued since 1995. On March 20, 2008, TVA submitted supplemental information on generic issues, addressing all Bulletins, GLs, and Circulars issued by NRC, identifying items where applicant or licensee action was requested, and providing additional detail regarding the status of each item TVA found to be applicable to WBN Unit 2.

On February 8, 2008, TVA submitted a comparison of the current Updated Final Safety Analysis Report (UFSAR) for WBN Unit 1 to Amendment 91 of the operating license application FSAR submitted by TVA on October 24, 1995. Amendment 91 is the most recent description of the design and planned configuration of WBN Unit 2 provided to the NRC.

METHODOLOGY FOR ASSESSMENT OF SCOPE OF REMAINING LICENSING REVIEW

The NRC staff has developed a methodology for identification of the overall review scope for the WBN Unit 2 operating license review, and for screening previously-completed reviews to determine if they remain valid and relevant. The discussion below describes this methodology, and identifies information needed from TVA to complete the screening effort.

In this discussion of the methodology and the following discussion of the results of the staff's assessment, several requests for additional information (RAIs) are identified. These requests are identified by number as they are discussed. A consolidated list of the RAIs is provided as Attachment 2 of this summary.

**Identification of Overall Review Scope**

The NRC staff's initial effort was to define the complete scope of topics that must be reviewed to complete the WBN Unit 2 licensing review. The Table of Contents of NUREG-0847 defines the majority of topics, and provides the basic organizational structure used for this assessment.

Topics identified and resolved by the TVA NPP are addressed by including issues described in NUREG-1232, Volume 4. Some additional topics, such as the Maintenance Rule, were identified by review of the table of contents of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants."

The set of review topics consolidated from these sources is given in Table 1. The numbering scheme used is based upon NUREG-0847, with new subsections added as needed to incorporate additional topics from the NPP, SRP, and generic issues. For convenience of tracking and reporting, topics are numbered at the subsection level (i.e., X.Y.Z, where X is the chapter number, Y is the section number, and Z is the subsection number). For example, the "Residual Heat Removal" review topic is Table of Contents subsection 5.4.3.

Chapters 1 through 23 are as given in NUREG-0847. The staff plans to add chapters addressing the NPP, generic issues, action items from NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980, and other regulatory topics. These items are shown in the Table of Contents as chapters 24 through 26. Numbering for these chapters is

tentative, and so may be revised, but the staff will ensure all these topics are addressed in supplements to NUREG-0847 completed in support of WBN Unit 2 licensing.

The staff is accessing information regarding generic issues provided by TVA in its September 7, 2007, and March 20, 2008, submittals. Subsections for tracking the status of individual generic communications will be addressed in a later version of this Table of Contents.

The flowchart shown in Figure 1 (page 13 of this assessment) provides an overview of the screening process that will determine whether a given topic requires additional review.

Figure 1, Box 1 defines the complete set of topics to be assessed, per the discussion above.

**Inventory of Previous Review Status**

The staff has identified a series of tests to determine if a topic has been reviewed for WBN Unit 2, and to determine if additional review is needed. Topics are evaluated to determine their previous review status in Box 2 of Figure 1.

If a topic within the overall scope has not been previously reviewed, then TVA will need to make a submittal addressing how that issue will be resolved for WBN Unit 2. The NRC will complete a safety evaluation of that topic, requesting additional information as necessary to complete the review. This process is shown in Figure 1, Boxes 3, 14, and 15.

Many licensing issues for WBN Unit 2 have been resolved in NUREG-0847 and its supplemental safety evaluation reports (SSERs). The staff's initial licensing effort in reactivating the review of WBN Unit 2 is an examination of previous review documentation to identify which topics remain unresolved out of the overall set of review topics described above.

As stated above, many topics within NUREG-0847 and its supplements were addressed for both WBN Units 1 and 2. NUREG-0847 and SSERs 1 through 4 addressed both WBN units when construction at the site was stopped to address the deficiencies described in the NPP. Therefore, topics resolved in NUREG 0847 through SSER 4 apply to both WBN Units 1 and 2, if those topics were not the subject of a subsequent review in SSERs 5 through 20.

NUREG-0847 supplements 5 through 20 document completion of the NRC staff's review to support WBN Unit 1 licensing. In many cases, the staff's review applied to WBN Unit 2, as well. The staff reviewed SSERs 5 through 20 to determine which WBN Unit 2 topics have been reviewed and resolved for WBN Unit 2.

Results of the staff's initial assessment of the inventory of the previous review status are described below.

**Evaluation of Previously-Reviewed Topics**

Even if a topic was previously reviewed and closed within NUREG-0847 and its supplements, there are circumstances that could lead to revision of a previous evaluation, or a new evaluation being performed. Therefore, the staff has identified a series of tests to determine if a previous evaluation needs to be revisited. The discussion below reflects the current staff approach, but is subject to revision as specific topics are addressed.

Effect of Watts Bar Unit 1 Design and Licensing Basis Changes

The first test assesses whether WBN Unit 1 design and licensing basis changes, which will be implemented on Unit 2, affect previous safety evaluations.

In its August 3, 2007, letter, TVA stated that it planned to submit a "red-line" version of the WBN Unit 1 UFSAR, documenting differences between the current FSAR and the FSAR in place at the time the Unit 1 operating license was issued in 1996. The Unit 1 operating license was issued based upon Amendment 91 of the operating license application FSAR, which was submitted by TVA on October 24, 1995. Amendment 91 represents the most recent information provided by TVA regarding the expected configuration of WBN Unit 2.

In its October 23, 2007, letter, the NRC staff asked TVA to provide information addressing the effect of WBN Unit 1 licensing basis changes on the Unit 2 licensing review as part of the "red-line" FSAR submittal. TVA's "red-line" FSAR on submittal of February 8, 2008, addressed the issues discussed in the staff's October 23, 2007, letter. The information requested by the staff is summarized as follows, followed a discussion of TVA's response.

In response to a request from the staff's October 23, 2007, letter, TVA stated it intends to provide a complete list of differences between WBN Units 1 and 2 on or before October 23, 2009. Since TVA plans to complete WBN Unit 2 two years or more after this date, there could be additional design changes after October 23, 2009, that could lead to additional differences between the units before WBN Unit 2 begins operation. TVA must ensure that the FSAR submitted for the WBN Unit 2 operating license reflects the final plant configuration in accordance with 10 CFR 50.34. This FSAR should reflect any additional differences between the units implemented after October 23, 2009. The staff will assess any differences described to determine their effect on the WBN Unit 2 licensing review.

In response to the staff's request that TVA describe the process for identification of WBN Unit 1 modifications that may affect a safety evaluation described in NUREG-0847, TVA provided information regarding a review of license amendments it has conducted to determine if safety margin is reduced by Unit 2 operation. While the information provided by TVA is useful, it does not completely address the issue raised in the staff's October 23, 2007, letter.

The staff is seeking information to determine if design changes made to WBN Unit 1 which are planned for implementation on WBN Unit 2, may affect the evaluation of a safety issue as described in NUREG-0847 and its supplements.

TVA has stated that it intends to complete WBN Unit 2 in a manner that aligns the licensing and design bases for WBN Units 1 and 2 to the fullest practical extent. Consistent with this goal, TVA will need to incorporate modifications made to WBN Unit 1 into WBN Unit 2. These modifications will include, for example, changes implemented on WBN Unit 1 in accordance with 10 CFR 50.59. It is anticipated that some set of these changes modify the facility design that was previously reviewed in NUREG-0847 and its supplements. In order to confirm that these modifications meet regulatory requirements, TVA needs to review these modifications and determine whether affected NUREG-0847 topics need to be re-opened.

For example, the staff is aware of modifications to the WBN Unit 1 containment sump to address GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," September 13, 2004. The existing evaluation of the containment sump strainer found in NUREG-0847 subsection 6.3.3 is based on the original containment sump strainer design, not the new strainer installed on WBN Unit 1 to address GL 2004-02. It is expected that a similar modification will be made to WBN Unit 2, as stated in a September 8, 2007, TVA letter, "Watts Bar Nuclear Plant (WBN) – Unit 2 – Initial Responses to Bulletins and Generic Letters." Such a modification will require TVA to update the WBN Unit 2 operating license application to reflect the new sump strainer design. The NRC staff will need to incorporate an evaluation of the new containment sump strainer into the evaluation of NUREG-0847 subsection 6.3.3; other parts of NUREG-0847 may be affected by this design change, as well.

The information provided by TVA in this portion of its response to this request from the NRC staff's October 23, 2007, letter does not provide adequate information to understand the process TVA plans to use to identify the effect of how WBN Unit 1 design changes being implemented on Unit 2 affect the Unit 2 operating license application. The NRC staff believes such a process would ensure all such changes are identified, so the staff can make appropriate revisions to safety evaluations in future supplements of NUREG-0847. Therefore, TVA is requested to provide a detailed description of a process describing how WBN Unit 1 modifications planned for WBN Unit 2 will be addressed in the Unit 2 operating license application (RAI 1).

Consistent with the July 25, 2007, SRM, TVA's process should assess the effect of "any exemptions, reliefs, and other actions which were specifically granted for Unit 1 to determine if the same allowance is appropriate for Unit 2" (RAI 2).

The staff will review revisions of the WBN Unit 2 operating license application and document its review in future supplements to NUREG-0847, as appropriate. This process is shown in Figure 1. Boxes 4 and 5 show the screening process, while boxes 12 and 13 describe the submittal and review process.

TVA also provided information regarding how TVA will demonstrate that the existing WBN Unit 1 configuration is applicable to Unit 2 for multi-unit operations. TVA response addressed this issue in part by stating that design differences between the two units will be submitted on or before October 23, 2009. However, it is not clear that the design differences to be identified provide all the information sought by the staff. For example, it is likely that a design change supporting multi-unit operations will be implemented in an equivalent manner on both units, and would, therefore, not be part of a list of design differences. Thus, the NRC staff would not be able to discern any effect on the capability of Unit 2 to support multi-unit operations from this information. Therefore, TVA is requested to describe how it will confirm Unit 1 configurations that will be applied to Unit 2 are applicable to Unit 2 with consideration of the differences between the units (RAI 3).

Generic Issue Resolution Before Plant Operation

In the July 25, 2007, SRM discussion of generic issues, the Commission stated that the "staff and TVA should, during the licensing period, look for opportunities to resolve such issues where the unirradiated state of Watts Bar 2 makes the issue easier to resolve than at Watts Bar 1."

To implement the Commission's direction, the staff plans to screen generic issues to determine if an alternative approach is appropriate before WBN Unit 2 begins operating. It is expected that this screening will be focused predominately on generic issues arising since 1996. Generic issues resolved before that time would have been before Unit 1 operation. The potential for a different approach considering the unirradiated state of Unit 2 would be expected only when radiological issues were factors in determining an approach for Unit 1.

As noted above, TVA has submitted information regarding the status of generic issues for WBN Unit 2 in letters dated September 7, 2007, and March 20, 2008.

This assessment, shown in Figure 1, Boxes 6 and 7, will be completed at a later date.

Potential Degradation or Structures, Systems, and Components (SSCs)

The staff has identified the potential for degradation of SSCs due to the effects of aging since SSCs were fabricated or installed, or due to the lack of preventive maintenance during the period of time WBN Unit 2 construction was suspended. Before an operating license for WBN Unit 2 can be issued, TVA must demonstrate that all SSCs meet their design basis requirements over the 40 year license period. Therefore, in its October 23, 2007, letter, the NRC asked TVA to address how it plans to address the possible degradation of SSCs during the period of time Unit 2 was deferred to ensure previously-constructed SSCs will be capable of performing their intended functions for the entire license term expected for WBN Unit 2.

TVA provided an initial response to this request in its January 28, 2008, regulatory framework letter. TVA stated that common systems and structures that have been supporting Unit 1 operation will be subject to an aging management review in accordance with 10 CFR Part 54 prior to the Unit 1 license expiration date, which is November 9, 2035. TVA also stated that previously-constructed systems and structures will be inspected and tested prior to turnover to plant operations, and that any system, structure, or component not meeting acceptance criteria would be repaired or replaced.

The NRC staff's initial review of TVA's response to this issue finds that TVA has not adequately addressed this issue, and that additional information will be required before the staff can conclude that TVA has an acceptable program in place to address degradation of SSC's during Unit 1 operation and Unit 2 deferral.

The license renewal regulations of 10 CFR Part 54 are intended to ensure that the current licensing basis of an operating reactor will be preserved during a license renewal interval. TVA does not address why it believes the processes established to implement 10 CFR Part 54 are relevant to an initial licensing review, as is the case for WBN Unit 2. In addition, TVA's commitment to conduct an aging management review of common equipment prior to the expiration of the Unit 1 license does not provide timely information for a licensing decision for WBN Unit 2 expected in about 2012. Therefore, TVA is requested to provide additional details regarding why it believes application of processes used for license renewal are relevant and appropriate to support WBN Unit 2 licensing (RAI 4a).

TVA's description of its plans for inspecting and testing SSCs does not provide sufficient information for the NRC staff to determine if those plans are acceptable. For example, TVA did

not provide a description of how the population of affected SSC's will be identified, and there is no description of how inspection and test criteria or procedures will be developed and what regulatory and industry code standards (i.e., American Society of Mechanical Engineers Code requirements) will be applied. The NRC staff also conducted an inspection assessing TVA's readiness to conduct construction activities from March 3 – 14, 2008. The inspectors informed TVA during the exit meeting that there was no scrutable process for determining or specifying the requirements for restoring and replacing important to safety SSCs that were made inactive in the layup program. The results of this inspection are documented in Inspection Report No. 05000391/2008006, which was issued April 30, 2008. Therefore, TVA is requested to provide additional details regarding the process it intends to use to identify and resolve possible component degradation (RAI 4b).

The NRC staff's review of this topic is ongoing, so additional issues may be identified as that review proceeds. Consistent with Figure 1, Boxes 8 and 9, the NRC staff will assess the impact of potential component degradation on previously-reviewed topics.

Applicability of New Regulations

To issue an operating license for WBN Unit 2, the NRC will need to confirm that, among other things, the WBN Unit 2 application meets regulatory requirements. Part of the process to be used for this confirmation is shown in Figure 1, Boxes 10 and 11.

TVA expects to complete WBN Unit 2 by early 2012, about 16 years after the WBN Unit 1 operating license was issued. During the period between issuance of the Unit 1 and Unit 2 licenses, new regulations have been issued to address a variety of topics. Therefore, TVA will need to review regulatory changes made in this period to determine which, if any, affect WBN Unit 2. The NRC staff will document its review of any new requirements applicable to WBN Unit 2 in a supplement to NUREG-0847.

Screening Against All Criteria

The logic given for the screening criteria shown in Figure 1 Boxes 4, 6, and 8, yields either a "yes" (topic requires additional review) or an "all" result. The purpose of the "all" outcome is to ensure all screening criteria are addressed for all previously-reviewed topics; each topic is screened against all remaining criteria regardless of the outcome for previous tests. For example, it is possible that a topic that comes into the review scope due to a WBN Unit 1 licensing basis change that will be applied to Unit 2 is also affected by potential SSC degradation (Box 8) or by a new regulatory requirement (Box 10).

Acceptance of Previous Review

If the evaluation for a topic does not meet any of the criteria applied in Figure 1, Boxes 4, 6, 8, or 10, then the existing evaluation of that topic remains valid.

RESULTS OF INITIAL STAFF ASSESSMENT

This initial assessment determines only if a topic was previously reviewed and approved in NUREG-0847 for WBN Unit 2 (i.e., Figure 1, Box 2).

The staff reviewed NUREG-0847 and its supplements, and information provided in TVA's January 29, and March 13, 2008, submittals. In the tables provided in these letters, TVA designated many topics as open (i.e., status codes O, OT, and OV in the March 13, 2008, letter). These topics are shown as open in the tables described below, since this designation ensures that topic will be subject to staff review and approval. The staff will complete reviews of these topics based on information TVA will submit at a later date.

NUREG-1232, Volume 4, addresses only WBN Unit 1, so each NPP topic will be reviewed to confirm TVA's corrective actions are applicable to WBN Unit 2.

Table 2 provides results of the staff's review of NUREG-0847 through Supplement 20. A determination is made for each topic as either open (additional review is required), or closed (review was completed in NUREG-0847 through Supplement 20). Table 3 summarizes topics that the staff considers closed based on this initial review, while Table 4 summarizes open topics. The information presented in Tables 3 and 4 is the same as that given in Table 2.

Tables 2, 3, and 4 focus on the NRC staff's review of WBN Unit 2 design information to determine compliance with regulatory requirements, as documented in NUREG-0847. These tables do not address NUREG-0847 chapters that provide administrative or summary information. For example, discussions provided in NUREG-0847 Chapter 1 are summary information describing the overall plant design and status of staff review. Staff review of specific technical topics, including the basis for resolution of a particular topic, is given in other chapters of NUREG-0847 and its supplements. Therefore, Chapter 1 is not included in Tables 2, 3, and 4.

In compiling the information presented in Tables 2, 3, and 4, the NRC staff reviewed only NUREG-0847 and its supplements; the staff did not review TVA submittals or other documents. The staff made conservative status assessments, keeping a topic open when the discussion within NUREG-0847 or its supplements did not clearly apply to WBN Unit 2.

For the purposes of this initial inventory, the staff compared its list of open topics to TVA status designations O, OT, and OV, and closed topics to TVA designations C, CI, and CT. The additional detail provided by TVA in its designations will be useful to the staff in its future screening efforts as discussed above. For topics designated as CI, TVA believes that the review of the plant design for those items is complete; field implementation of the design for these topics will be verified by NRC inspection. Note that in the case of topics with status designation CT, TVA asserts that those topics have been previously reviewed, but indicates that those issues will be subject to future review because of changes affecting the original approval that will be reflected in review of the WBN Unit 2 Technical Specifications. This is one of the circumstances considered by the staff in the screening test described by Figure 1 Box 4. In many cases, the staff's initial review concluded that topics remain open for WBN Unit 2, contrary to an assertion by TVA that those topics are closed per TVA's January 29 and March 13, 2008, submittals. Upon additional review of background documentation used in the initial review, the staff may conclude that some of those topics have actually been previously reviewed and

resolved for WBN Unit 2. Table 5 provides a list of topics where the NRC's initial conclusions do not match the status proposed by TVA.

Table 6 lists topics considered open by the NRC staff's initial review where no submittal is planned by TVA, per its March 13, 2008, submittal (i.e., TVA status designations C and CI). TVA is requested to submit additional information demonstrating compliance with regulatory requirements before the topics listed in Table 6 can be considered closed for WBN Unit 2 (RAI 5). Topics with status designations O, OT, OV are considered open, as discussed above, and will be addressed by future submittals and NRC staff reviews. Similarly, topics with TVA status designation CT, which the NRC staff considers to be open, will also be addressed in future submittals and staff reviews.

Table 7 lists NUREG-0847 supplements examined by the staff as part of this assessment. In comparing this list to information submitted by TVA, the staff found cases where tables provided in TVA's January 29, and March 13, 2008, submittals did not identify every supplement to NUREG-0847 where a given topic was addressed. For example, TVA's March 13, 2008, submittal states that SER subsection 5.2.5, "Reactor Coolant System Boundary Leakage Detection," was resolved in NUREG-0847 for both WBN units. The NRC staff determined that this topic is also addressed in NUREG-0847 Supplements 9, 11, and 12. Table 8 lists cases where the staff found that TVA did not identify all NUREG-0847 SSERs relevant to a particular topic. In some instances, the staff's review of SSERs not identified by TVA concluded that the status given by TVA was nonetheless appropriate (i.e., the staff agreed with TVA's conclusion that a topic "closed").

The staff found that for many of the topics described by the NUREG-0847 Table of Contents, TVA did not identify all NUREG-0847 supplements affecting those topics. The staff expects TVA to ensure that its submittals thoroughly address all relevant licensing information.

In order to complete licensing of WBN Unit 2 as described in these SSERs, TVA will need to ensure that the facility design and construction is completed consistent with all staff evaluations and the information submitted by TVA as the basis for those evaluations. Therefore, TVA needs to include all SSERs in its compilation of previously-completed licensing reviews to facilitate clear definition of remaining unresolved technical issues. The staff requests that TVA address all SSERs pertinent to a given topic in future revisions of the regulatory framework letter, updating the review status for WBN Unit 2, as necessary (RAI 6).

SUMMARY

The NRC staff has reviewed NUREG-0847 and its supplements to assess the status of the WBN Unit 2 operating licensing review. The staff has confirmed that many topics have been resolved in NUREG-0847. However, there are also many topics where the staff's initial effort did not conclude or could not clearly determine that those issues had been resolved. The staff has also outlined a process where previously-resolved topics will be tested to determine whether a revised evaluation is needed, and has identified issues where additional information is needed from TVA to ensure this process can be implemented.

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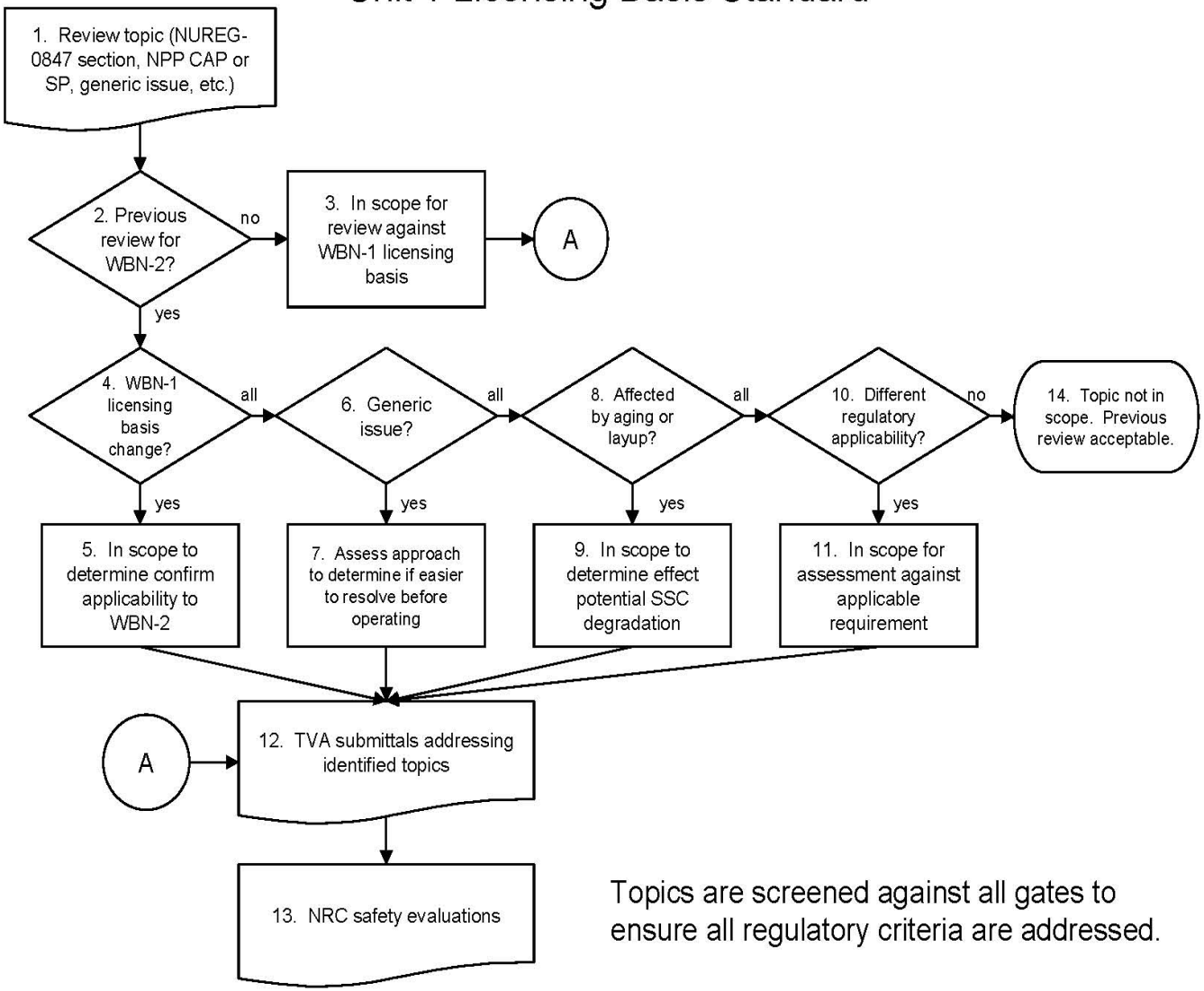
Attachments:
1. Tables of Review Topics
2. Requests for Additional Information

# Figure 1. Scope of Watts Bar Nuclear Plant Unit 2 Licensing Review

Identification of Topics for Additional Technical Review

## Unit 1 Licensing Basis Standard




Topics are screened against all gates to ensure all regulatory criteria are addressed.

Tennessee Valley Authority

Watts Bar Nuclear Plant, Unit 2

Operating License Application

Requests for Additional Information

1. Provide a detailed description of a process describing how WBN Unit 1 modifications planned for implementation on WBN Unit 2 will be addressed in the Unit 2 operating license application.

2. Assess the effect of any exemptions, reliefs, and other actions which were specifically granted for WBN Unit 1 to determine if the same allowance is appropriate for Unit 2.

3. Describe how TVA will confirm Unit 1 configurations to be applied to Unit 2 are applicable to Unit 2 with consideration of the differences between the units.

4a. Provide details regarding why TVA believes application of processes used for license renewal are relevant and appropriate to support WBN Unit 2 licensing.

4b. Provide details regarding the process TVA intends to use to identify and resolve possible degradation of structures, systems, and components.

5. Submit additional information demonstrating compliance with regulatory requirements for topics listed in Table 6.

6. Address all supplements to NUREG-0847 pertinent to a given topic in future revisions of the regulatory framework letter, updating the review status for WBN Unit 2, as necessary.