

## **POLICY ISSUE INFORMATION**

January 15, 2009

SECY-09-0012

FOR: The Commissioners

FROM: Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation

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

PURPOSE:

This paper informs the Commission of the status of the staff's activities and accomplishments regarding the reactivation of construction, licensing, and inspection activities for the Watts Bar Nuclear Plant (WBN) Unit 2. This paper does not address any new commitments or resource implications.

SUMMARY:

In accordance with the direction provided by the Commission in its staff requirements memorandum (SRM), SRM-SECY-07-0096, "Staff Requirements - Possible Reactivation of Construction and Licensing Activities for the Watts Bar Nuclear Plant Unit 2," dated July 25, 2007, the staff has established the foundation of a licensing review approach that employs the current licensing basis for Unit 1 as the reference basis for the review and licensing of Unit 2. In implementing this approach, the staff has formulated the activity topics that remain to be evaluated along with the framework for the outstanding reviews of generic communications issues and other special programs. Further, a newly developed Office Instruction provides direction and expectations from the Office of Nuclear Reactor Regulation (NRR) management for all currently known actions that must be completed for the staff to complete its review of an operating license (OL).

**CONTACTS:** Lakshminarasimh Raghavan, NRR/DORL  
(301) 415-2429

Patrick D. Milano, NRR/DORL  
(301) 415-1457

The staff has established a construction inspection program that will utilize historical inspections and a broad scope of future inspections to provide reasonable assurance that the plant is properly built and ready for operation. A new Inspection Manual Chapter (IMC) was issued to provide guidance for implementation of the inspection program at WBN Unit 2.

#### BACKGROUND:

The WBN facility is located in Rhea County, which is in southeastern Tennessee, approximately 50 miles northeast of Chattanooga. The facility is owned and operated by the Tennessee Valley Authority (TVA). The plant has two Westinghouse-designed pressurized-water reactors. WBN Unit 1 received a full-power OL in early 1996. Since July 2000, WBN Unit 2 has been in a deferred nuclear plant status, as described in the Commission's Policy Statement on Deferred Plants (52 *Federal Register* 38077, dated October 14, 1987). The current construction permit expiration date for WBN Unit 2 was extended to March 31, 2013, by Order dated July 7, 2008.

By letter dated August 3, 2007, TVA informed the U.S. Nuclear Regulatory Commission (NRC) of its plan to reactivate and complete construction activities at WBN Unit 2 under the existing construction permit issued pursuant to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR Part 50). TVA plans to align Unit 2 to the Unit 1 licensing and design basis to the maximum extent possible.

SRM-SECY-07-0096 provides Commission approval of the staff's recommendations for the licensing and inspection programs that should be used for WBN Unit 2, and gives additional directions.

#### DISCUSSION:

The status of the licensing and inspection activities associated with construction of WBN Unit 2, which include the staff's accomplishments to date, staff activities in focus, and project schedule, is discussed below.

##### 1. Licensing Approach Established

On September 2, 2008, NRR issued Office Instruction LIC-110, "Watts Bar Unit 2 Reactivation of Operating License Review." LIC-110 establishes the organization for the staff team, process work flow, management controls, and internal and external stakeholder interfaces for an effective and efficient licensing review of the OL application for WBN Unit 2. LIC-110 does not address the scope of construction and inspection activities.

The staff's approach to reviewing the OL application involves (1) reconstituting the licensing basis by determining whether a technical topic has been previously reviewed and approved by the NRC and classifying those topics as closed, if appropriate, (2) ensuring the validity of previously approved topics for additional considerations (e.g., effect of dual-unit operation, new safety orders, new regulations), and (3) using the WBN Unit 1 current licensing basis as a reference for reviewing open topic areas, including review of special topics such as the Maintenance Rule (10 CFR 50.65).

## 2. Licensing Basis Reconstituted

The staff reviewed (a) topics covered in NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Review Plant, Units 1 and 2," issued June 1982 (SER), and its supplements through No. 20, (b) issues addressed in the NRC's generic communications, and (c) topics identified and resolved by the TVA Nuclear Performance Plan (NPP), which included issues described in NUREG-1232, Volume 4, "Safety Evaluation Report on Tennessee Valley Authority: Watts Bar Nuclear Performance Plan, Watts Bar Unit 1," issued January 1990. The results of these reviews are discussed below.

### a. Baseline Assessment of NUREG-0847 Topics

In NUREG-0847, the staff documented the evaluation of TVA's application for an OL for WBN Units 1 and 2. The staff conclusions from the review of certain issues in NUREG-0847 through Supplement 4 were applicable to both Units 1 and 2. After the issuance of Supplement 4, WBN licensing activities were suspended while TVA addressed some programmatic deficiencies.

Supplement 5 to NUREG-0847 updated the status of the outstanding issues, confirmatory issues, and proposed license conditions. In Supplements 5 through 20, the discussions were generally specific to WBN Unit 1, but in limited instances, applied to both WBN Units 1 and 2.

The staff has completed its review of topics covered in the NUREG-0847 SER through Supplement No. 20. In a letter to TVA dated October 10, 2008, the staff documented its review (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082840361). The baseline assessment review covered 288 topics (excluding introduction and administrative sections associated with these topics) and determined that the NRC had previously approved 163 topics. The staff concluded that TVA should make submittals for the 125 topics that remain open. The staff will use the Unit 1 current licensing basis in its review of the topics.

### b. Baseline Assessment of Generic Communication Issues

The staff has completed its review of topics covered in NRC generic communications issued since circa 1973 (the time of the initial OL application for WBN Units 1 and 2). On May 28, 2008, the staff issued a letter to TVA to document the results of the baseline assessment. The letter listed those items that the staff considers to be open. Further review or verification needs to be conducted for open items.

The staff reviewed over 1000 generic communication documents, e.g., bulletins, generic letters, etc., to determine whether the NRC had previously resolved the topics for WBN Unit 2. Based on its review, the staff determined that most of the generic communications have been previously reviewed and resolved. Some were determined to be not applicable (e.g., issues that relate to boiling-water reactors or do not require any response on behalf of WBN Unit 2). However, approximately 60 generic communication issues are considered open for resolution. TVA will likely need to provide additional submittals for identified open issues. The staff will review the submittals and/or perform inspections to resolve the issues for Unit 2. As directed by the

Commission in SRM-SECY-07-0096, the staff will consider how the open issues were resolved for Unit 1.

c. Baseline Assessment of TVA Nuclear Performance Plan Topics

In response to an NRC demand for information in 1985, TVA prepared a corporate NPP, which proposed corrective actions for problems with the overall management of TVA's nuclear program and a site-specific plan entitled "Watts Bar Nuclear Performance Plan." During the WBN Unit 1 OL review, the staff reviewed both the corporate and WBN site-specific plans and documented its findings in two SERs, NUREG-1232, Volume 1, issued July 1987, and NUREG-1232, Volume 4. In NUREG-1232, Volume 4, the staff documented its review of 18 corrective action programs (CAPs) and 11 special programs (SPs) at WBN.

For the majority of the CAPs and SPs, TVA plans to implement the approach and actions used to resolve the items for Unit 1, as described in NUREG-1232, Volume 4, without modifications. However, in its letters dated January 29, May 29, and September 26, 2008, providing its plans to address the issues, TVA proposed different approaches for certain sub-issues within the Cable Issues CAP. The staff is currently reviewing these open issues. In the September 26, 2008, letter, TVA states that the approaches for resolution of the Fire Protection and QA Records CAPs, as well as several SPs, were found to be satisfactory at the time of completion at Unit 1. In addition, TVA has elected to resolve the Replacement Items CAP by conducting an extensive refurbishment program rather than performing back checks of previously installed and/or procured replacement items. The staff is evaluating the acceptability of these items.

3. Construction Permit Extended

The construction permit for WBN Unit 2 was previously set to expire on December 31, 2010. On May 8, 2008, TVA had requested an extension to provide adequate time to complete construction and licensing efforts. On July 7, 2008, the staff issued an Order extending the construction permit expiration date to March 31, 2013. The staff completed an environmental assessment finding that the extension would have no significant impact on the environment. The Order was published in the *Federal Register* on July 11, 2008 (73 FR 39995). Pursuant to 10 CFR 2.309, "Hearing Requests, Petitions to Intervene, Requirements for Standing, and Contentions," the Order provided 60 days for the public to request a hearing. The scope of the hearing notice was with respect to challenges on the permit holder's asserted good cause justification for the extension. The NRC did not receive any request for hearing on the extension of the construction permits.

4. Construction Inspection Activities

a. Resident Inspector Office Established

A resident inspector office has been established and staffed with inspectors who are dedicated to performing inspections of the construction activities at WBN Unit 2. Currently, a senior resident inspector (SRI) and two resident inspectors (RIs) are assigned to Unit 2, who are independent of the SRI and RI staffing for Unit 1. As TVA

more clearly defines the scope of remaining construction activities and the inspection resources are better understood, the NRC staff will review the need for additional resident inspectors. The staff issued a coordination plan to address the overlap in duties between the Unit 1 and Unit 2 resident inspectors and to assign responsibility for construction-related inspection activities to the various technical divisions within Region II.

b. Inspection Manual Chapter 2517 Issued

The staff reactivated IMC 2512, "Light Water Reactor Inspection Program—Construction Phase"; IMC 2513, "Light Water Reactor Inspection Program—Pre operational Testing and Operational Preparedness Phase"; and IMC 2514, "Light Water Reactor Inspection Program Startup Testing Phase" for use at WBN Unit 2. The inspection procedures associated with IMC 2512 have been reactivated, while the inspection procedures for IMCs 2513 and 2514 will be reactivated prior to their usage. The staff did not revise the old IMCs to address outdated processes and guidance. Therefore, the staff issued a new manual chapter IMC 2517, "Watts Bar 2 Construction Inspection Program," on February 15, 2008, to (1) provide the policies and requirements for the WBN Unit 2 construction inspection program during that unit's resumption of construction after an approximately 20-year suspension of construction activities, and (2) establish a record of the inspection activities, applicant actions and technical issues resolved to support the decision for issuing an OL. IMC 2517 also addresses the outdated processes and provides additional guidance for the construction inspection program. For example, IMC 2517 describes a construction assessment process with similarity to the Reactor Oversight Process, which replaces the systematic assessment of licensee performance (SALP) process mentioned in many of the construction IMCs and inspection procedures.

c. Inspection Program Reconstituted

The reconstitution effort involves comparing previously performed Unit 2 inspections, as documented in inspection reports, to the construction phase requirements specified in IMC 2512 construction inspection procedures. The staff has completed the reconstitution reviews of inspection reports for all applicable IMC 2512 construction inspection procedures. The reconstitution effort identified the quantity of Unit 2 construction inspections already performed and will assist the staff in determining the scope of future inspections needed to complete the construction inspection program. Approximately 940 old inspection reports were included in this review. Reconstitution of the pre-operational testing IMC 2513 and start-up testing 2514 inspection program procedures was not required because these areas were not previously inspected for Unit 2.

d. Scope of Future Inspections Defined

Future inspections will be performed on construction activities that are covered by applicable IMC 2512 construction inspection procedures and on items identified by the review of other areas. The other areas that will require future inspection include generic communications, CAPs, SPs, open items, licensing identified items, and previously known allegations that are applicable to Unit 2. The staff completed the generic communications issues and allegations reviews to determine which items warrant

inspections. Factors that were considered in the generic communications reviews included the age of the issue, whether the issue was previously inspected at other plants, and any unique circumstances that could increase the significance of the issue at WBN. Approximately 1030 generic communications issues were reviewed, and the staff identified 86 items to be inspected. Because Unit 1 was the NRC's primary focus when many of the historical WBN allegations were previously closed, the allegation review concentrated on potential unresolved Unit 2 hardware type problems. Of the approximate 1000 historical WBN allegations, the staff identified 21 allegations for follow-up inspection on WBN Unit 2. The staff will compare the reconstitution results and the scope of future inspections to ensure all the inspections specified in the construction phase IMC 2512 are completed. The inspections in pre-operational testing IMC 2513 and start-up testing 2514 will be performed as specified in the applicable program requirements.

e. Construction Inspection Program Initiated

The staff conducted a construction readiness inspection during March 3-14, 2008 (ADAMS No. ML08120735). The inspection focused on the quality assurance organization, the corrective action program, procurement, plant equipment lay up and preservation, engineering support, training, and qualification. The intent of this inspection was to determine whether TVA and its contractor, Bechtel Corporation, have adequate programs, procedures, and processes in place to perform safety-related work. On the basis of the inspection, the staff concluded that TVA has adequate controls in place to conduct the limited amount of ongoing procurement, design, and construction activities but noted that much of the guidance and instructions to support construction had not yet been developed. As TVA has issued additional documents and performed construction activities, the staff has inspected these items. Three quarterly inspections have been completed. These inspections were performed primarily by the resident staff and followed up on many of the areas reviewed during the readiness inspection. The inspections concluded that TVA has adequate controls for ongoing construction activities.

f. Self-Assessment Activities Completed

A self-assessment audit was completed in August 2008, to evaluate the program, procedures, and processes that have been developed for NRC oversight of construction activities at WBN Unit 2. The audit team consisted of two Region II inspectors, with no previous involvement with the WBN inspection program, and an NRR staff member from the Division of Inspection and Regional Support. In the audit report dated September 10, 2008 (ADAMS No. ML082540103), the team made a number of recommendations and suggestions to improve the construction inspection program.

Overall, the audit concluded that preparations for construction inspections were adequate. Another self-assessment is planned for 2009 that will focus more on the implementation of the construction inspection program.

5. Public Web Page Initiated

Information regarding the Watts Bar Unit 2 construction project and NRC inspections can be found at <http://www.nrc.gov/reactors/plant-specific-items/watts-bar.html>.

6. Conversion of NUDOCS Documents into ADAMS

Most of the existing documents supporting licensing of WBN Unit 2 were not in the ADAMS Main Library. Therefore, the staff has been working with the Office of Information Systems to place all Watts Bar documents (approximately 500,000 pages) in the ADAMS Main Library to facilitate electronic access to the docket record by the staff and other stakeholders. All available paper documents (approximately two-thirds of the total set) have been scanned into ADAMS. The remaining documents were on microfiche and have also been scanned. The staff is reviewing these documents for Sensitive Unclassified Non-Safeguards Information (SUNSI) before making them publicly available in the ADAMS Main Library. Because of the large volume of documents that require this review, the staff will conduct SUNSI reviews as documents are identified and used in support of the staff's ongoing evaluations and inspection activities.

7. Noticing of Opportunity for Hearing on the OL Application

In SRM-SECY-07-0096, the Commission directed the staff to issue an additional notice of opportunity for hearing on the WBN Unit 2 OL application. On December 27, 1976, a combined notice of receipt of application, notice of consideration of issuance of facility operating licenses, and notice of opportunity for hearing (41 FR 56244) was originally issued. An intervention petition was filed, but the Atomic Safety and Licensing Board ruled that the individual did not have the requisite interest necessary for standing and denied the petition.

The staff originally planned to re-notice the OL application in the summer of 2008. However, the staff determined that it did not have a sufficiently updated application to re-notice the opportunity for hearing. Because TVA needs to provide additional information on both the safety and environmental aspects of the application as required by 10 CFR 50.34, "Contents of Construction Permits and Operating License Applications; Technical Information"; 10 CFR 51.45, "Environmental Report"; and 10 CFR 51.53, "Preconstruction Environmental Reports," the staff revised its schedule for the notice to mid 2009. Specifically, the staff needs information regarding the proposed modified condenser cooling mode (a modification of the currently fully closed mode to include a supplemental once-through cooling mode of operation) for dual-unit operation, and an analysis of severe accident mitigation design alternatives. The regulations in 10 CFR 51.45 require an environmental report that discusses the impact of the proposed action on the environment including an analysis of alternatives available for reducing or avoiding adverse environmental effects.

Based on recent discussions with the TVA, the staff expects to receive the required additional environmental information by February 2009. The staff review in this area generally occurs over an 18-month period to allow sufficient time for scoping audits, data gathering, consultation with other agencies, and preparation of a draft impact statement. However, the staff believes that it may be able to expedite its review.

9. Development of Project Schedule

TVA has completed its initial schedule of engineering and construction activities required for completion of the facility. TVA has defined and scheduled the other supporting activities such as the submittal of final safety analysis report amendments for NRC review. Although the NRC staff has used the TVA schedule to develop its own schedule and assign preliminary branch-level staff resources, activities in the schedule will be refined after receipt of each TVA submittal to baseline the milestones, activity durations, and reviewer resources. NRC staff progress will be managed against these baseline activities. The staff is using the project management capabilities in Enterprise Project Management (which is currently being used by the Office of New Reactors for combined license reviews) to assist in the scheduling and resource management.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

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Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation

Enclosure:  
Office Instruction LIC-110



# U.S. Nuclear Regulatory Commission Office of Nuclear Reactor Regulation NRR OFFICE INSTRUCTION

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## Change Notice

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Office Instruction No.: **LIC-110**

Office Instruction Title: **Watts Bar Unit 2 License Application Review**

Effective Date: **September 2, 2008**

Approved By: **James T. Wiggins**

Date Approved: **August 28, 2008**

Primary Contacts: L. Raghavan, Chief                      Patrick D. Milano  
NRR/DORL/LPWB                                      NRR/DORL/LPWB  
301-415-2429    301-415-1457  
[Rags.Raghavan@nrc.gov](mailto:Rags.Raghavan@nrc.gov)                      [Patrick.Milano@nrc.gov](mailto:Patrick.Milano@nrc.gov)

Responsible Organization: **NRR/DORL**

Summary of Changes                      Initial Issuance

Training:                                      This should be discussed with the technical staff in  
technical reviewer meetings.

ADAMS Accession No.:                      ML081930063

## 1. POLICY

This Office Instruction establishes the process to be used for the staff's review of the application for an operating license (OL), pursuant to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," at Watts Bar Nuclear Plant (WBN) Unit 2. On August 3, 2007, the Tennessee Valley Power Authority (TVA, the applicant) informed the Nuclear Regulatory Commission (NRC) of its intention to reactivate and complete construction activities at WBN Unit 2. These processes are being established to implement the direction given to the staff by the Commission in Staff Requirements Memorandum (SRM) SECY 07-0096, "Staff Requirements - Possible Reactivation of Construction and Licensing Activities for the Watts Bar Nuclear Plant Unit 2," dated July 25, 2007.

## 2. OBJECTIVES

The objective of this Office Instruction is to ensure a complete and high-quality review of the documentation supporting the OL application. In support of the objective, this Office Instruction establishes: (a) the organization for the staff team, (b) the roles and responsibilities for the team members, (c) the process work flow, and (d) management controls. Coordination of reviews conducted by other NRC offices such as the Offices of Nuclear Security and Incident Response (NSIR), Nuclear Material Safety and Safeguards (NMSS), and Nuclear Regulatory Research are discussed in this document. Although interfaces with Region II are described, the scope of construction and inspection activities will be addressed separately by Region II.

## 3. BACKGROUND

The WBN facility, which is owned by TVA, is located in southeastern Tennessee approximately 50 miles northeast of Chattanooga. The facility consists of two Westinghouse-designed 4-loop pressurized water reactors with ice condenser type containments. TVA received a full-power OL for WBN Unit 1 in early 1996. 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 (CP) for both units 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 WBN 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 NRC sent a letter to TVA on September 17, 1985, requesting information, pursuant to 10 CFR 50.54(f). In this demand for information, the staff asked for TVA's plans to address the deficiencies identified in 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. At about the same time, TVA suspended construction of WBN Unit 2, 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 it considered WBN Unit 2 to meet the NRC's definition for deferred nuclear plant units, as described in the Commission's Policy Statement on Deferred Plants, dated October 14, 1987

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(52 FR 38077). On October 24, 2000, the NRC issued an order extending the Unit 2 CP 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), endorsed the general approaches of various corrective actions. The staff determined that when fully implemented, 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. NRC 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 NRC staff then suspended its licensing and inspection activities.

Satisfactory resolution of NPP topics for WBN Unit 1 was 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. In these supplements, the NRC staff concluded that WBN Unit 1 met applicable regulations and guidance; however, no conclusions were stated for WBN Unit 2.

In a letter dated November 14, 2006, TVA informed the NRC 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. Based on the results of this study, TVA notified the Director of the Office of Nuclear Reactor Regulation (NRR) on August 3, 2007, of its intention to complete construction activities at WBN Unit 2. On December 3, 2007, TVA indicated that it planned to resume unrestricted construction activities under the existing CP and to request an OL, pursuant to 10 CFR Part 50, prior to April 1, 2012.

In its Policy Statement on Deferred Plants, the NRC provided the agency's position regarding quality assurance (QA) requirements, specifically the maintenance, preservation and documentation requirements for deferred plants, and how new regulatory requirements will be applied to deferred plants upon reactivation. In its August 3, 2007 letter, TVA provided information required by this policy statement. By letter dated October 22, 2007, the NRC staff informed TVA that its August 3, 2007, letter satisfied the information requirements of the policy statement.

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In its August 3, 2007, letter, TVA indicated it believes that, from regulatory, safety and plant operational perspectives, significant benefit would be gained from aligning the licensing and design bases of WBN Units 1 and 2 to the fullest extent practicable. TVA stated that it will complete WBN Unit 2 in compliance with applicable regulations promulgated prior to and after the issuance of the WBN Unit 1 OL. In addition, TVA will incorporate modifications made to WBN Unit 1, and those modifications currently captured in the WBN Unit 1 five-year plan, into the WBN Unit 2 licensing and design bases. By this approach, TVA believes that this alignment of the WBN Unit 1 and 2 licensing and design bases will ensure that there is operational fidelity between the units and, at the same time, demonstrate that WBN Unit 2 complies with applicable NRC regulatory requirements.

TVA also stated in its August 3, 2007, letter that it anticipated making no changes to the Site Security Plan or the Site Emergency Plan for purposes of WBN Unit 2 construction reactivation. If needed, changes to the Site Security Plan or the Site Emergency Plan will be submitted to NRC as required by applicable regulations. Prior to resuming construction activities on quality or safety-related structures, systems or components (SSCs), the Quality Assurance Program and procedures will be put in place.

In a Commission Paper (SECY-07-0096) dated June 7, 2007, the NRC staff described its plan to implement existing Commission policy on reactivation of deferred plants. In the Commission Paper, the staff sought Commission approval on the approach for reactivation of construction, licensing, and inspection activities.

After reviewing the staff's recommendations, the Commission, in SRM SECY-07-096, directed the staff to use the current licensing basis for Unit 1 as the reference basis for the review and licensing of Unit 2. Further, the Commission indicated that TVA and the NRC staff should review any exemptions, reliefs, and other actions, which were specifically granted for Unit 1, to determine whether the same allowance would be appropriate for Unit 2. Significant changes to this licensing approach would be allowed for cases where the existing Backfit Rule would be met or as necessary to support dual unit operation. The Commission also indicated that the staff should encourage the applicant to adopt updated standards for Unit 2 where it would not significantly detract from design and operational consistency between Units 1 and 2.

The Commission also directed the staff to resolve current generic safety issues (e.g., GSI-191) or security issues that would be much easier to resolve before plant operation. The staff and TVA should, during the licensing period, look for opportunities to resolve such issues where the unirradiated state of Unit 2 makes the issue easier to resolve than at Unit 1.

#### 4.0 BASIC REQUIREMENTS

##### 4.1 Overview

TVA has requested that WBN Unit 2 be licensed pursuant to the requirements of 10 CFR Part 50. As such, 10 CFR 50.40 contains the considerations to be used as guidance when determining that a license could be granted to an applicant. These considerations include:

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- a. there is reasonable assurance that the applicant will comply with the Commission's regulations and the health and safety of the public will not be endangered;
  - b. the applicant is technically qualified to engage in the proposed activities;
  - c. issuance of the license will not be inimical to the common defense and security or to the health and safety of the public; and
  - d. any applicable requirements of Part 51 have been satisfied.

Sections 50.42 and 50.43 of 10 CFR Part 50 provide additional considerations for class 103 licenses including:

- a. the proposed activity will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized, and
- b. the proposed license would be consistent with the antitrust laws

Section 50.50 of 10 CFR Part 50 states that upon determination that an application for a license meets the standards and requirements of the Atomic Energy Act and regulations, and that notifications, if any, to other agencies or bodies have been duly made, the Commission will issue a license in such form and containing conditions and limitations, such as Technical Specifications, as deemed appropriate and necessary. Further, Section 50.54 provides the conditions in every nuclear power reactor OL that are issued under 10 CFR Part 50.

#### 4.2 Areas for Review of Operating License Applications

The three major functional areas for completing the review of the WBN Unit 2 OL application are: (1) General information – as required by 10 CFR 50.33, (2) Technical information required by 50.34 and (3) an environmental report required by 10 CFR 51.53.

##### 4.2.1 General Information

The regulations at 10 CFR 50.33 specify the general information required to be in each application. This information includes the applicant's name, address, description of business, citizenship class and duration of license sought, financial information regarding funding for operation, assurance of decommissioning funding, radiological emergency response plans, schedule for construction completion, and a list of regulatory agencies with jurisdiction over the rates and services incident to the proposed activity.

##### 4.2.2 Technical Information

Section 50.34 of 10 CFR Part 50 specifies the technical information required to be contained in an application for a CP and an application for an OL. In particular, 10 CFR 50.34(b) states that each application for an OL shall include a final safety analysis report (FSAR), which includes information that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the SSCs and the facility as a whole. Regarding facility

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operation, the FSAR must include information on the applicant's organizational structure and qualifications, managerial and administrative controls to assure safe operation, plans for preoperational testing and initial operations, plans for normal operations including maintenance, surveillance and testing of SSCs, emergency plans, proposed technical specifications (TSs).

Sections 50.34(c) and (d) require that an OL application include a physical security plan and a safeguards contingency plan, respectively.

#### 4.2.3 Environmental Report

Paragraph 50.30(f) of 10 CFR Part 50 requires an environmental report to be submitted along with an application for an OL. The required contents of the environmental report are outlined in 10 CFR 51.53. Additional information necessary to aide the NRC in complying with Section 102(2) of National Environmental Protection Act (NEPA) is required from the applicant pursuant to 10 CFR 51.41.

Paragraph 50.34(b)(1) of 10 CFR Part 50 states that all current information, such as the results of environmental and meteorological monitoring programs, which have been developed since issuance of the CP, relating to site evaluation factors identified in 10 CFR Part 100 shall be included in the FSAR.

## 5. RESPONSIBILITIES AND AUTHORITIES

### Director of the Office of Nuclear Reactor Regulation (NRR)

In accordance with the regulations in 10 CFR Part 50, 10 CFR 1.43, and the Energy Reorganization Act of 1974 and consistent with NRC Management Directive (MD) 9.27, the Director of NRR is, in part, responsible for implementing policies, programs, and procedures for all aspects of licensing and inspection of production and utilization facilities and operators of such facilities. Specifically, the Director is authorized and directed, in part, to take such action as is necessary to carry out the functions assigned MD 9.27 or other official directives or communications, subject to the limitations prescribed therein. The Director is authorized to take action to issue licenses for manufacture, construction, possession, use, acquisition, and operation of utilization and production facilities required by the Atomic Energy Act of 1954, as amended; sections 202(1), 202(2), and 203 of the Energy Reorganization Act of 1974; and 10 CFR Part 50, except where the decision rests with an Administrative Law Judge, an Atomic Safety and Licensing Board, the Atomic Safety and Licensing Appeal Board, or the Commission, after a hearing pursuant to 10 CFR Part 2. This authority may include the licensing of byproduct, source, and special nuclear material used or produced in, and used in the operation of or stored at, utilization and production facilities.

The Director of NRR, and as delegated to the cognizant NRR Divisions Directors, is responsible for those actions to review, evaluate, and process all aspects of applications for licenses, and amendments to such licenses, for the construction, operation, safeguarding, and environmental protection for these facilities.

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### Division of Operating Reactor Licensing (DORL)

The Director of DORL is the Senior Executive Service sponsor for the WBN licensing evaluation effort and is responsible for providing overall strategic guidance, oversight and executive communication.

DORL has established a Watts Bar Special Projects Branch to address the licensing actions. The Branch Chief is responsible for implementing the policy, programs, and activities associated with the staff's evaluation of the WBN Unit 2 OL application. The Branch Chief provides overall leadership for the project and has primary responsibility for project management, coordination and operation level leadership. The Branch Chief is the primary point of contact for interfacing with the applicant. The Branch Chief authorizes changes to staff activity schedules and man-hour needs.

### Divisions of Engineering (DE), Safety Systems (DSS), and Component Integrity (DCI)

The Divisions review the systems, structures, and components, and perform systems and engineering related safety evaluations in support of the review of the application and supplemental information to ensure that NRC requirements have been properly implemented regarding the design bases. The Divisions also provide technical expertise for special inspections, projects, and program.

### Division of Inspection and Regional Support (DIRS)

DIRS implements the programs to improve generic TSs, provide NRR interpretations of TS requirements, implement the national program for the licensing of nuclear reactor operators, and conduct reviews to ensure the effective consideration of human factors engineering in nuclear power plant design and operation and the adequacy of facility training programs and emergency operating procedures.

### Division of Risk Assessment (DRA)

DRA implements the programs for the evaluation of risk-informed TS submittals and other plant specific licensing actions for the WBN Unit 2 OL application. In addition, DRA staff will review fire protection, external event hazards, human reliability, and treatment of uncertainty. These activities utilize risk methods along with deterministic approaches, thus supporting the Commission's Final Policy Statement on the Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities (60 FR 42622, August 16, 1995).

DRA is also responsible for the review of the deterministic design-basis accident dose consequences analyses and the associated atmospheric dispersion estimates to show compliance with the applicable requirements.

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Division of Policy and Rulemaking (DPR)

DPR provides for the financial reviews, including decommissioning funding assurance, insurance, and indemnification, reviews of antitrust license conditions, generic communications, topical reports; and licensing processes associated with the WBN Unit 2 OL application.

Division of License Renewal (DLR)

DLR provides for issuing *Federal Register* notices for receipt and acceptance review of the environmental portion of WBN Unit 2 OL application as well as for announcing the preparation of the Environmental Impact Statement and initiating the scoping process. DLR staff is responsible for managing the environmental review of the application, including defining the scope of the environmental review, preparation of a draft and final environmental impact statement, coordination with local, state and federal government agencies and Indian Nations, the conduct of public meetings and site audits, and interacting with the applicant's top level technical and supervisory personnel as well as NRC management.

Division of Program Management Policy Development & Analysis Staff (PMDA)

PMDA provides support in the areas of information technology, information management, infrastructure services, performance management, contracts management, and work-planning activities for the WBN Unit 2 project. These responsibilities will be accomplished through the Centralized Work Planning process, applying Enterprise Project Management (EPM), to provide up-to-date tasking, resource, and workload information and business data reports for management and executive-level decision making.

Office of Nuclear Security and Incident Response (NSIR)

As stated in 10 CFR 1.46, the Office of Nuclear Security and Incident Response, in part:

- (a) Develops overall agency policy and provides management direction for evaluation and assessment of technical issues involving security at nuclear facilities, and is the agency safeguards and security interface with the Department of Homeland Security (DHS), the Department of Energy (DOE), other agencies; and the international activities related to the security of radioactive material and nuclear facilities;
- (b) Develops emergency preparedness policies, regulations, programs, and guidelines for nuclear facilities;
- (c) Provides technical expertise regarding emergency preparedness issues and interpretations; and
- (d) Develops and directs the NRC program for response to incidents, and is the agency emergency preparedness and incident response interface with the DHS, the Federal Emergency Management Agency (FEMA) and other Federal agencies.

Therefore, NSIR has the primary responsibility for licensing reviews in the area of emergency preparedness, safeguards and security, including review of emergency response and security plans. In this regard, NSIR will review and evaluate the emergency plans associated with the CP and OL for WBN Unit 2. It will also review and evaluate FEMA's findings and determinations

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relating to offsite responses by state and local governments. It will provide NRC's evaluation of TVA's onsite/offsite emergency preparedness.

NSIR will also review and evaluate the safeguards and security licensing basis and plans of the WBN units and the adequacy of existing safeguards requirements, training and qualifications, contingency plans for licensing, and required operational readiness reviews and performance testing. NSIR provides interface with the Department of Homeland Security regarding the consultation review of potential site vulnerabilities of the new reactor at the WBN site.

#### Office of Nuclear Material Safety and Safeguards (NMSS)

In accordance with the requirements of 10 CFR 1.42, NMSS is responsible for regulating activities that provide for the safe and secure production of nuclear fuel used in commercial nuclear reactors; the safe storage, transportation, and disposal of high-level radioactive waste and spent nuclear fuel; and the transportation of radioactive materials regulated under the Atomic Energy Act. NMSS ensures safety and security by implementing a regulatory program involving activities including licensing, inspection, assessment of licensee performance, events analysis, enforcement, and identification and resolution of generic issues.

The operation of a nuclear facility requires certain quantities of special nuclear material, source material, and byproduct material under the provisions of 10 CFR Parts 70 and 30 before an OL is issued to a facility. NMSS has the primary responsibility for application review and issuance of Part 70 licenses.

#### Watts Bar Unit 2 Reactivation Assessment Group

A WBN Unit 2 Reactivation Assessment Group (WRAG) consisting of participants from NRR (primarily DORL, DIRS and other divisions as necessary) and NSIR will be established to oversee project completion. Region II and OGC should be invited to all meetings. In addition to its oversight role, the WRAG will serve as the focal point for status of the project and for coordination between the Region and the Offices at Headquarters. The specific charter for the group, including organization and reporting responsibilities, will be established prior to its implementation.

### 6.0 ACTIONS FOR TECHNICAL REVIEWS OF APPLICATION

The NRC staff completed a major portion of its review as documented in safety evaluation report (SER), NUREG-0847, and Supplemental SERs (SSERs) 1 through 4, which are clearly applicable to both units. After issuance of SSER 4, the NRC staff's review was primarily focused on Unit 1. In limited instances, the staff reviewed and approved certain topics for both units after SSER 4. The SER and SSERs were written in accordance with the format and scope outlined in the NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Revision 1, dated July 1981 (SRP). In general, this format and scope precedent should be followed as the licensing review proceeds for Unit 2, to the extent that the licensing and design bases of WBN Units 1 and 2 will be aligned to the fullest extent practicable.

Because NRR has been reorganized since the SRP was last updated in 1981, the technical review groups listed in the SRP no longer correspond to current NRR technical branches. The

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lead technical review branch for each section of the SER has been updated and is listed in Appendix B to this Office Instruction.

#### 6.1 Licensing Review Reconstitution

As stated above, the NRC staff documented its prior conclusions regarding the review of certain issues in NUREG 0847 through Supplement 4. In general, the discussions in these documents were applicable to both Units 1 and 2. After issuance of Supplement 4, WBN licensing activities were suspended while TVA addressed some programmatic issues.

Supplement 5, dated November 30, 1990, to NUREG-0847 updated the status of the outstanding issues, confirmatory issues, and proposed license conditions. Beginning with Supplement 5 and continuing through Supplement 20, the discussions were generally specific to WBN Unit 1, notwithstanding that the titles included both Units 1 and 2.

##### 6.1.1 Status of Open Licensing Actions

In order to understand and assess the remaining review activities, the NRC staff should review NUREG-0847 and its supplements in detail to determine if the review of a specific area has previously been completed and documented for WBN Unit 2. On the basis of this review, the staff should create the initial list of open topics to establish the scope of regulatory review that must be completed.

By letter dated January 29, 2008, as supplemented on March 13, 2008, TVA submitted a document that describes its current understanding of the sections required in the SER that have not been fully evaluated and accepted by the NRC staff. The NRC staff has reviewed this list, in particular to identify items that have been previously reviewed and approved for WBN Unit 2 in NUREG-0847 and its supplements. However, items that are determined to be closed may be reopened for valid reasons. An example of a valid reason would be a design change to the facility that affects a previously completed safety evaluation or the identification of new safety information that necessitates further review. As stated in the Commission's SRM of July 25, 2007, open items should be reviewed against the current licensing basis for Unit 1 for the review and licensing of Unit 2. However, the technical staff must be cautious when making a regulatory finding without first verifying that the regulation either applies to Unit 2 or that the applicant has committed to follow the regulation.

##### 6.1.2 Exemptions and Reliefs Approved for Unit 1 and Required for Unit 2

In the July 25, 2007, SRM, the Commission stated that TVA and the staff should review any exemptions, reliefs, and other actions, which were specifically granted for Unit 1, to determine whether the same allowance is appropriate for Unit 2. In a letter dated October 11, 2007, TVA indicated that WBN Unit 2 does not require any exemptions from regulations that have been previously approved for Unit 1. If any additional exemptions are required during the construction, TVA should make appropriate submittal for NRC staff review and approval in accordance with the applicable regulations. TVA also provided a list of relief requests granted for WBN Unit 1 that would be required for WBN Unit 2 construction completion. TVA should make appropriate relief requests for Unit 2 for staff review and approval.

### 6.1.3 Generic Communications

By letters dated September 7, 2007, and March 20, 2008, TVA provided its understanding of the status of completion of the actions identified in generic communications for both WBN units that have been issued since 1973 (prior to issuance of the CP).

DORL should assess the status list from TVA to independently verify the characterization of each item of generic communication. The NRC staff acceptance that TVA has completed the appropriate actions and that the item was considered closed has usually been documented in official NRC correspondence to TVA and/or in an Inspection Report.

For those items that the NRC agrees the action is closed, no further action is required by NRR and the status of the item will be listed as review complete. For the remaining generic communications, TVA will provide its response for WBN Unit 2, and the NRC staff will review the response. In general, if its approach was found acceptable for Unit 1, TVA plans to use the same approach for Unit 2.

NRR should document its review in an SSER or in a separate safety evaluation, which will then be referenced in the SER. Although the NRR programmatic reviews may be complete, these items may remain open until Region II verifies proper implementation by inspection. DORL should notify the Region II counterparts that programmatic reviews are complete and coordinate with Region II to identify those generic communications where inspection followup is necessary to validate the adequate completion of required actions.

### 6.1.4 Nuclear Performance Plan

On September 17, 1985, the NRC sent a letter to TVA requesting that the applicant submit information on its plans for correcting problems with the overall management of its nuclear program as well as its plans for correcting plant-specific problems. In response to this letter, TVA prepared a Corporate Nuclear Performance Plan that identified and proposed corrections to problems with the overall management of its nuclear program, and a site-specific plan for WBN entitled, "Watts Bar Nuclear Performance Plan." The staff reviewed both plans and documented results in two safety evaluation reports, NUREG 1232 Vol. 1 (dated July 1987) and NUREG 1232 Vol. 4 (dated January 1990).

In NUREG 1232 Vol. 4, the NRC staff documented its general review of most of the corrective action programs (CAPs) and special programs (SPs) through which the applicant would effect corrective actions at WBN. A total of 18 CAPs and 11 SPs were established by TVA to address these concerns.

In its letter dated August 3, 2007, TVA stated its intention to resolve the Unit 2 CAPs and SPs using NUREG 1232 (vol. 4), NUREG 0847, and applicable regulations. TVA also stated that if it is necessary to modify the criteria, then it will submit those changes to the NRC for review and approval. If there are no changes, NRR should close out these items in an SSER, using, where appropriate, the same logic as used for Unit 1.

## 6.2 Technical Review and Preparation of Safety Evaluation Inputs

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### 6.2.1 TVA Submittals

After obtaining the NRC staff's baseline assessment of items that remain open for NRC staff review on WBN Unit 2, TVA will prepare one or more submittals providing the NRC staff with the new or supplemental information to address these topics.

### 6.2.2 Review and Evaluation

Using the status of remaining open items from the baseline assessment, the NRC technical staff should begin with a review of the facility design basis as presented in WBN Units 1 and 2 FSAR (through Amendment 91), the mark-up of the Unit 1 FSAR showing the changes that will be incorporated into the final version of the Unit 2 FSAR, and NUREG 0847 Supplements 1 thru 20.

At this point, the technical staff should re-familiarize itself with the applicable regulations and general or plant-specific design criteria, previous staff positions, the SRP and Environment SRP (ESRP), applicable generic communications and TMI Action Items, and other regulatory guidance documents.

The NRC staff should first address the open items from the baseline licensing status document that are identical for WBN Units 1 and 2 and that have previously been reviewed and approved by NRC staff for WBN Unit 1. This initial assessment should include responses to generic correspondence and NPP items. As discussed in Section 6.1.1 of this Office Instruction, open items should be reviewed using the current licensing basis of WBN Unit 1. Thus, design features and administrative programs that were found to be in compliance with the regulations for Unit 1 will likely be acceptable for Unit 2. Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with current staff positions. As a result of dual-unit operation or other considerations, such as rulemaking or commitments in the UFSAR, it should be noted that WBN Unit 2 may be subject to certain regulatory requirements that may be different than Unit 1.

The NRC staff should verify the appropriate use of regulatory requirements that are different for WBN Unit 1. Significant changes to licensing approach of using the Unit 1 licensing basis would be allowed where the existing backfit rule would be met or as necessary to support dual unit operation. It should also be noted that the staff must consider whether a need exists to amend the Unit 1 licensing basis. However, there may be some regulations that apply only to one of the units.

TVA will supply a description of the changes implemented at Unit 1 but have not been reviewed and approved for Unit 2 by the NRC technical staff. These changes include those approved for Unit 1 by amendments since the issuance of its operating license. TVA will also provide the applicable portion of the FSAR and the proposed TSs. This process will allow the NRC technical staff to have the complete scope of information that should be evaluated in order to prepare an SER input. If the information in a submittal relies on information in prior or future submittals, TVA will provide and highlight a listing of these dependencies in its submittal. In addition, TVA will maintain a list of open items for each SER section.

Upon receipt of a TVA submittal, DORL should define the review process in EPM and identify the appropriate review groups. This will initiate the technical review effort. DORL should assist

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the technical staff should there be a need for coordination of the review between various divisions/branches.

The technical review is generally defined by the SRP and ESRP along with the Unit 1 design and licensing basis. The technical review branches should use these documents to assist with the development of the scope of the review, criteria for acceptability, resource requirements, and schedules that will be added as appropriate into EPM. After specific technical staff members are assigned to review certain sections, the process of preparation of any requests for additional information (RAIs) and preparing SER input should proceed in a fashion similar to that of any other licensing amendment review process. The staff should continue to classify issues as outstanding issues, confirmatory issues, and proposed license conditions. The staff should take note of any significant anomalies of the review requiring special emphasis, or additional documentation that the applicant has promised for later submittal when establishing resources, schedules, and SER inputs.

In its review, the NRC technical staff should also focus on the items involving dual unit operations. In addition, the staff should review items that are identical for WBN Units 1 and 2 that have not previously been reviewed and approved by NRC staff. These items are changes in the design and licensing basis for WBN Unit 1 that TVA has implemented without NRC prior approval under the 10 CFR 50.59 process. Lastly, the NRC staff should pay particular attention to the items that are unique to WBN Unit 2.

### 6.2.3 Handling Sensitive Information

In an SRM dated May 7, 2004, the Commission directed the NRC staff to develop guidance to ensure information that could reasonably be expected to be useful to potential adversaries is withheld from public disclosure. In particular, the NRR staff must practice proper control of both safeguards information and sensitive unclassified non-safeguards Information (SUNSI). SUNSI means any information of which the loss, misuse, modification, or unauthorized access can reasonably be foreseen to harm the public interest, the private, commercial or financial interests of the entity or individual to whom the information pertains, the conduct of NRC and Federal programs, or the personal privacy of individuals. In Commission Paper SECY-04-091, the staff presented its approach for determining the appropriate handling of information and more specific guidance for withholding or releasing information about nuclear power reactors. The staff should refer to the paper and its attachments for more specific guidance on identifying and handling this information.

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### 6.3 Review of Special Licensing Topics

#### 6.3.1 Safeguards Plan and Emergency Plan

The review of the application for compliance with plant security and safeguards requirements is conducted by the NSIR. Much of this review is withheld from public disclosure pursuant to 10 CFR 73.21. In addition, NSIR will coordinate with DHS on the consultation review of a new reactor, as required by the Energy Policy Act of 2005. The review of the application for compliance with emergency preparedness requirements is conducted in the Emergency Preparedness Directorate in NSIR, with input from FEMA. Results of the review, including FEMA input, are sent directly to DORL. The DORL Project Manager (PM) should coordinate with NSIR to complete any required reviews of these programs.

The NSIR staff will review and evaluate security, training and qualification, and safeguards contingency plans, collectively referred to as the security plan, that describe a comprehensive physical security program, a physical security system, and a protective strategy for providing high assurance of protection. The review will include details of the applicant's commitments to establishing a protective strategy based on a reliable and available physical protection system that would provide high assurance of compliance with the objective of 10 CFR 73.55(a), meet the provisions of 10 CFR 73.55(b) through (h), and meet the general performance requirements of 10 CFR 73.55. The NRC staff will review the changes to physical security organization; access controls, including physical barriers; an approach for searches of personnel and packages; means of detection, assessment, delay, and security response; criteria for the selection of personnel for security purposes; coordination with local law enforcement for assistance; and the training of security personnel. Specific area of security-significant for the NRC staff review will be the adequacy of the applicant's identification of additional target sets and required site protective strategy (and supporting technical basis) for providing high assurance for adequate protection of an integrated operations of both Units 1 and 2. The NRC staff will review the applicant's documented security bases and commitments for meeting the security requirements described in 10 CFR 73.1(a)(1), 10 CFR 73.55, Appendix B to 10 CFR Part 73, Appendix C to 10 CFR Part 73, 10 CFR 73.56, 10 CFR Part 26, 10 CFR 74.19 (MC&A) and NRC Orders that are currently being applied to WBN Unit 1

In a letter dated May 8, 2008, the NRC staff notified TVA of the staff's initial assessment of the remaining operating reactor license review scope. The staff noted that, although NUREG-0847, Revision 0, found the emergency plan to be acceptable for Units 1 and 2, TVA withdrew the plans upon which this approval was based and resubmitted a revised plan on February 12, 1993. This revised plan was reviewed only in the context of WBN Unit 1. Therefore, the NSIR staff will review the current WBN emergency plan in the context of Unit 2, and not just changes to that plan as proposed by TVA.

#### 6.3.2 Quality Assurance Plan

The Quality Assurance (QA) Plan described in the FSAR for Unit 2 has been modified. TVA should describe its proposed changes to the Operating Nuclear Quality Assurance Plan to include WBN Unit 2. Thus, the technical staff should reassess and prepare an SER input that addresses its reviews associated with the QA Plan.

### 6.3.3 Environmental Review

The NRC staff should publish notices in the *Federal Register* to announce (a) its intent to prepare an Environmental Impact Statement and (b) start of the environmental review scoping process. These notices should be published shortly after the NRC issues its re-notice of acceptance of TVA's application.

The DLR Environmental Branch A (REBA) will assign an Environmental PM to manage the environmental review and to prepare the Environmental Impact Statement. The draft and final Supplemental Environmental Statement should be prepared in accordance with NUREG-1555, "Environmental Standard Review Plan" (ESRP) and follow the provisions of 10 CFR Parts 71 and 91. NUREG-1555 supersedes NUREG-0555, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," issued in 1978. New technical issues, such as environmental justice and severe-accident mitigation design alternatives, have raised the need for new regulatory guidance.

### 6.3.4 Special Nuclear Materials Receipt and Storage License

A general license, pursuant to 10 CFR Part 70, is issued to receive title to and own special nuclear material without regard to quantity. Notwithstanding any other provision of Part 70, a general licensee is not authorized to acquire, deliver, receive, possess, use, transfer, import, or export special nuclear material, except as authorized in a specific license. TVA does not currently have a specific 10 CFR Part 70 license for WBN Unit 2 to possess or use special nuclear material. Subject to the conditions and requirements incorporated in the license, the OL issued pursuant to 10 CFR Part 50 typically addresses areas under Parts 30, 40, and 70 (see WBN Unit 1 OL paragraphs 2.B(2) to 2B(5)). NMSS has the primary responsibility for application review and issuance of Part 70 licenses.

### 6.3.5 Independent Design Verification Program

The WRAG will recommend whether or not an independent design verification program (IDVP) by the staff is required to independently verify that key aspects of the plant have been designed properly. The staff requires the applicant to have such a review conducted by an independent contractor, unless the applicant can provide an acceptable basis for not conducting the IDVP. The staff's review of the applicant's results of the IDVP, or alternative, should be documented in an SSER (Chapter 17).

## 6.4 Preparation of NUREG Supplements

An SSER contains the staff's conclusions regarding resolution of open safety issues proposed by the applicant since the SER was published, and acknowledges receipt of confirmatory information. In practice, the resolution of open issues continues all the way to the time of issuance of a low-power or full-power license. The DORL PM should plan to issue an SSER at the time issuance of an OL. SSERs must be prepared with the same care and attention given the SER because they possess the same stature as the SER relative to the subjects they evaluate.

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As with submittals of information regarding open topic areas that need to be evaluated and accepted by the NRC staff, responses to RAIs may be submitted in the form of amendments to the OL application. Each RAI response should be reviewed for technical adequacy and clarity of the information. The NRC staff should review the response in a timely manner that is consistent with the approved schedule.

The SER and its supplements are the principal documents in the regulatory processing of an OL application. They are intended to be a summary of the review and evaluation of the OL application by the NRC staff as to the anticipated effect of the facility on public health and safety. These documents become part of the public record and are used as the foundation for the evidence presented to any public hearing on safety that may occur. The staff must provide a well developed and logical summary of the review and conclusion, which must incorporate a clear, concise, and regulatory basis for the staff's acceptance. The staff should note that in a hearing proceeding involving an application, a safety evaluation and/or staff testimony and evidence on the contention or controverted matter prepared in advance of the completion of the safety evaluation may need to be submitted pursuant to 10 CFR 2.337.

The format of the SER and SSERs, like that of the FSAR, generally follows the most recent revision of Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," and the SRP. However, additional chapters are included in the SER to discuss subjects pertinent to the staff review that are not discussed in the FSAR. The format for all SSERs should be consistent, at least to the level of detail of sections below the chapter headings. The technical editor in the Policy and Publications Management Branch of the Office of Information Services will assist in preparing the SSERs and has final responsibility for the SSER.

Input for SER chapters and sections should be sent by memorandum to the Chief, Watts Bar Special Projects Branch, for incorporation into an SSER. In general, the process for completion of the reviews, transmittal of inputs, and management monitoring will be similar in nature to the processes in Office Instruction LIC-101. The DORL PM should review each submittal and take the proper steps to arrive at an acceptable written presentation from each source. If a review is judged to be unacceptable, the DORL PM should return it to the responsible branch chief and reviewer for reworking. The DORL PM may make changes that do not affect the technical rationale or conclusions. However, in either case, appropriate dialogue must take place with the reviewer to ensure that a mutually acceptable report is finally produced. If agreement cannot be obtained, the problem must be elevated to a sufficiently high level of management so that the evaluation can be used. In addition to the SER input, the technical branch must provide a list and status of any open issues that may still exist within the topic area being discussed. These open issues will be tracked within the EPM schedule to ensure that the issues are addressed.

The SER and SSERs should be issued to the public, to the NRC Advisory Committee on Reactor Safeguards (ACRS), and to the parties to the Atomic Safety and Licensing Board (ASLB) hearing as a summary of the staff's conclusions regarding the application. Thus, the documentation of the staff reviews needs to contain the staff findings and a detailed discussion of the bases for the findings. The SER should also include a discussion of the extent to which the SRP acceptance criteria are met, or the reasons for acceptance or rejection when an acceptance criterion is not met. It should be noted that the "standard" for acceptance or rejection is whether or not the regulation or portion thereof that underlies the SRP acceptance

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criterion is satisfied. The regulations (10 CFR 50.34) require applicants to document differences from the SRP acceptance criteria. The applicant's documentation should facilitate the preparation of the SER.

It should be noted that a number of additional requirements were imposed on nuclear power plants as a result of the Three Mile Island (TMI) accident. These requirements were described in "Clarification of the TMI Action Plan Requirements," NUREG-0737 and its supplement. The TMI-related issues have been incorporated into the SRP as a regular part of the licensing review process; a separate TMI section in the SER is not needed. The present format requires incorporation of the discussion of TMI issues into appropriate sections of the SER. This format includes a summary statement of each TMI requirement instead of the verbatim repetition of the NUREG-0737 requirement and the clarification statements.

In addition, where the NRC has enhanced security by issuing orders that have not yet been codified through rulemaking, the NRC will, if required, order a licensee upon receipt of an OL to comply with specific security enhancements deemed necessary for adequate protection before receiving reactor fuel. Examples of NRC orders with security significance are EA-03-086, dated April 29, 2003, that supplemented the DBT for power reactors; EA-02-261, "Access Authorization Order," dated January 7, 2003; EA-03-038, "Fitness-for-Duty Requirements Order," dated April 29, 2003; and EA-03-039, "Security Personnel Training and Qualification Requirements Order," dated April 29, 2003. The applicants will be required to meet requirements codified in the final rulemaking currently under Commission review.

#### 6.5 Treatment of Hearing Contentions

Subparts A, C, D, and G, J of 10 CFR Part 2 specify NRR staff responsibilities in situations involving hearings for license applications. Office Instruction LIC-201, "NRR Support to the Hearing Process," provides staff procedures for preparation of testimony, notification of boards, and overall support to the hearing process to ensure that the staff satisfactorily fulfills its responsibilities. In addition to the guidance in this office instruction, the attorney assigned to the hearing may provide specific guidance. The Office Instruction includes such actions as noticing hearing opportunities including *Federal Register* notice on E-filing documents and applications containing SUNSI or SGI, maintaining hearing files and mandatory disclosure files, preparation of testimony by NRR personnel as necessary to support the hearing process, Licensing Board Notifications, and NRC's decision whether to participate in non-mandatory hearings.

#### 6.6 Review of SER Supplements

After preparation of the SSER, it is subjected to review and comment by the Watts Bar Special Projects Branch Chief, by the Office of the General Counsel (OGC), and by the branch chiefs of the participating review groups (if substantive changes were made to the branch input). Final approval and signature authority will be with the Chief, Watts Bar Special Projects Branch or as defined in Office Instruction ADM-200.

The SSER is printed and distributed to the mailing list, to the ACRS, and to the public through ADAMS. To aid NRC management in its review of the SSER, the DORL PM will coordinate with TVA to maintain a list that categorizes and summarizes the status of any outstanding issues.

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The PM should consult with the assigned NRR coordinator for ACRS activities regarding distribution of the SSER.

#### 6.7 Review by the Office of the General Counsel

The OGC reviews the legal form and content of proposed official actions. The SSER should not be sent to OGC concurrently with the NRR management review. In general, OGC should see the final product after the NRR, NSIR, and NMSS branch chiefs have concurred.

#### 6.8 Completion of Safety Review

Near the conclusion of the licensing review, TVA should submit a "proof and review" copy of the proposed TSs and its Bases and the FSAR. Because TVA will provide the affected TS and FSAR sections when submitting its amendment applications, this "proof and review" copy is reviewed by the staff to verify all licensing issues and changes made during the review of amendments have been appropriately captured in these primary licensing documents.

#### 6.9 Preparation of Supplement to Final Environmental Statement

The Final Environmental Statement related to the OL (FES-OL) should follow Appendix A to subpart A, "Format for Presentation of Material in Environmental Impact Statements," in 10 CFR Part 51. Requirements proposed in the FES should be summarized into an environmental protection plan, which constitutes Appendix B to the OL.

The FES-OL is an extension of the CP review and the Final Environmental Statement at the CP stage (FES-CP). The FES-OL differs from the CP environmental statement in that changes in the environmental impacts relating to plant operation since the issuance of the FES-CP are emphasized and new information and analyses not previously performed or considered are provided.

Upon acceptance of TVA's application, the technical staff should evaluate changes in the environmental conditions at the site from what was described previously by the NRC in the existing FES-OL. After that evaluation is complete the staff should address those changes in the context of NRC's regulations in 10 CFR Part 51, and its obligations under NEPA.

The Environmental PM should coordinate interactions with federal, state, and local agencies throughout the development of the supplemental environmental impact statement (SEIS).

When the Draft SEIS is completed it should be circulated to the appropriate NRR divisions for concurrence as determined by the Environmental PM. It should then be sent to OGC for concurrence. Once the Draft SEIS is published, its availability should be announced through press releases and with the issuance of a *Federal Register* notice. Public meetings should be conducted in the vicinity of the plant to solicit comments on the Draft SEIS. The public comment period should be open for a minimum of 75 days. After the comment period closes the Environmental PM will coordinate consideration and appropriate disposition of all comments including incorporation of comments or suggestions for the Final SEIS. The Final SEIS should be circulated through concurrence similar to the Draft SEIS. Once the Final SEIS is issued and

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filed with the U.S. Environmental Protection Agency, the NRC has to wait 30 days before moving forward on the proposed action.

#### 6.10 NRC-Licensee Management Meeting

Shortly before the decision on the application is made, a meeting should be held at the site to discuss the project. The NRC will be represented by the Director of NRR or his designee, senior NRR and Region II management. Management-level representatives of the applicant are requested to attend. The purpose of this meeting is to give NRC managers a chance to discuss with the applicant's managers the plant design and the applicant's management capabilities and organization. This meeting provides an opportunity for the applicant to present an overview of the plant design, unique plant features, special licensing or design problems, organizational structure, and a realistic assessment of the plant's readiness for operation.

#### 6.11 Construction Readiness Assessment

Before an OL is issued, a finding must be made by the Commission that the nuclear facility has been constructed in accordance with the application and NRC requirements. Historically, applicants have provided a letter that stated that the construction was completed in accordance with NRC requirements and requested issuance of the OL. NRC Inspection Procedure 94300 describes the process that will be used by the regional office to document its recommendation regarding issuance of the license. Completion of construction, in addition to the actual building of the facility, includes implementation of the QA program for operations, completion of preoperational testing, preparation of operational procedures, and implementation of the security, emergency, and environmental monitoring plans and programs, implementation of the operator qualification program, and plant staffing.

To address operational readiness of physical protection system, the applicant's security-related hardware and equipment will be subject to inspections. The applicant must provide an implementation schedule for the construction and installation of security-related systems and the establishment of security program elements to the NRC for consideration in the form of review and inspections to confirm the operational readiness of SSCs relied on for security. In addition, the NRC will verify the elements of the security operational program by conducting inspections, and the implementation of the site protective strategy may be verified by force-on-force exercise before Unit 2 is authorized to receive reactor fuel assemblies.

Throughout construction, the DORL PM must keep continually aware of the construction progress and estimated fuel load date. The PM usually does this through informal discussions with regional office personnel and documented estimates by the applicant. Occasionally, however, the PM may need a specific analysis of an estimated fuel-load date. In such cases, the PM should request such an analysis from the regional office.

An OL may be issued pending the satisfactory completion of certain construction items. The PM must maintain liaison with regional personnel to make sure all outstanding items of construction are completed before granting any authorization for operation at a higher power level. The PM is responsible for including any special conditions that must be reflected in the OL, especially conditions stated in the SER and SSERs.

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### 6.12 Status of the Inspection Program and Findings

Approximately 90 days before the scheduled issuance of the OL, Region II will prepare a status report as detailed in Inspection Procedure 94300. The status report will be transmitted by memorandum to the Director of DORL and will provide the region's evaluation as to whether or not the published fuel-loading date is reasonable in light of any work remaining to be completed by the licensee. The 90-day report will address, as appropriate, the status of: (a) findings of required inspections, (b) corrective actions and unresolved items, (c) preoperational testing, startup test development, and system performance deficiencies and plans for correction, and (d) system construction status, including punch-list items that could affect safe startup and operation. The 90-day status report will be updated every 4-to-6 weeks until 1 month before scheduled fuel loading.

### 6.13 ACRS Reviews

Correspondence regarding the ACRS's findings and conclusions should be added as an Appendix to the SER.

### 6.14 Preparation of OL

In the past, applicants for OLs have sometimes submitted FSAR amendments as late as just days before the OL is to be issued. The DORL PM should assure that TVA understands that additional time will be required to review new information. If late amendments (within several months of the projected OL date) are necessary, they will impact the schedule.

The FSAR, as amended up to the last amendment before the OL is issued, is an official agency record. It is the principal document on which the Commission bases its issuance of the OL. After the OL has been issued, the licensee will follow 10 CFR 50.71(e) and 50.59 for changes to the UFSAR.

At this stage, TVA should certify completion of construction activities and request that the CP be converted to an OL.

It has been prior NRC practice to issue a license that authorizes operation below 5-percent power (low-power OL). This allows fuel loading, the completion of hot-functional testing, and low-power physics testing. Then, if the applicant has demonstrated the capability to operate the facility safely, and all the necessary license conditions have been met, a new OL is issued to allow operation up to full power. Approximately 4 months before the projected date of construction completion (fuel-load date), the DORL PM should prepare the appropriate OL documents, including the OL with any necessary license conditions, the TSs (Appendix A to the OL), the environmental protection plan (Appendix B to the OL), the *Federal Register* notice, and a transmittal letter to the applicant.

### 6.15 Technical Specifications (TSs)

Each applicant for an OL shall include in its application proposed TSs in accordance with the requirements of 10 CFR 50.36. A summary statement of the bases or reasons for such

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specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the TSs.

One of the major tasks in performing the OL review is the development of suitable TSs. The TSs become Appendix A of the OL and govern the subsequent operation of the facility relative to operational limitations necessary to ensure the health and safety of the public. TSs identify and define all the safety-related operating limits and requirements that the licensee must abide by without change unless specific approval (i.e., in the form of a license amendment or discretionary action) is obtained from the NRC. The TSs must be substantially complete before the plant operating procedures can be written and the plant operators can be trained. The schedule objective is to issue a "proof and review" draft of the TSs no later than 3 months before the scheduled fuel-load date. The staff anticipates that the TSs for WBN Unit 1 will be used to prepare the TSs for Unit 2.

#### 6.16 Completion of Hearings

In 1977, a hearing opportunity was provided for the OLs for Watts Bar Units 1 and 2. Intervention was denied by an ASLB, and the Licensing Board's decision was affirmed by the Atomic Safety and licensing Appeal Board (5 NRC 1418). In accordance with the Commission's SRM, a notice of an additional opportunity for a hearing will be published in the *Federal Register*.

Upon receipt of a request for hearing or a petition to intervene, the Secretary of the Commission will forward the request or petition and/or any proffered contentions and any answers and replies either to the Commission for a ruling on the request or petition and/or proffered contentions or to the Chief Administrative Judge of the ASLB Panel for the designation of a presiding officer under 10 CFR 2.313(a) to rule on the matter. This ruling will include a decision on the admissibility of the contentions and whether a hearing should be held. The issues upon which a hearing would be structured must be based on specific grounds cited by the potential interveners. If a hearing is to be held, a notice is published in the *Federal Register*.

If a hearing is held at the OL stage, it is the Commission's policy and previous practice to begin the public hearing in the vicinity of the site of the proposed facility.

#### 6.17 Issuance of OL

In accordance with Inspection Procedure 94300, Region II will provide a status report by a memorandum to the Director of NRR approximately 30 days before the OL is scheduled to be issued. This memorandum will be sent and will include the results of the region's inspection efforts; items that remain to be completed, with appropriate milestones; a statement concerning the implementation of the applicant's QA program; and the region's recommendations for issuance of an OL. The 30-day memorandum should be added as an Appendix to the SER. The memorandum will include enclosures addressing items to be completed: (a) before fuel loading, (b) before initial criticality, (c) prior to exceeding 5-percent power, and (d) prior to full-power operation.

Once the preceding items are satisfactorily completed, the WRAG should provide confirmation to the Director of NRR that open licensing issues at WBN Unit 2 have been resolved consistent

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with the SRM SECY-07-096. The NRC staff should then meet with the Commission to request its approval for issuing the full-power OL.

Historically, a low-power OL is issued to allow fuel load and some low power physics testing. After the applicant has demonstrated its ability to operate the facility within the design and licensing basis, a full-power OL is granted. The two-step process is not required by the regulations.

## 7.0 MATERIALS LICENSING REVIEW

The operation of a nuclear facility requires certain quantities of special nuclear material, source material, and byproduct material. For WBN Unit 1, TVA already has specific licenses pursuant to 10 CFR Parts 30, 40, and 70.

NMSS is responsible for processing these license applications and issuing the specific licenses. The applicant must submit information on the technical capabilities and the facilities and procedures for handling and storing this material in connection with the applicant's overall program for radioactive materials safety. The conclusions of this review are incorporated in the SER. The licenses under Part 30, 40, and 70 are typically incorporated into the Part 50 license.

## 8.0 PROJECT REPORTING

Reports should be provided to all internal stakeholders associated with the WBN Unit 2 Reactivation Project. These reports will vary in detail and in frequency depending on the stakeholder audience and will provide management an overall status of the project.

## 9.0 PROJECT BUDGET AND SCHEDULE CHANGE MANAGEMENT

The open items for each SER section will be tracked in the WBN Unit 2 project schedule using the EPM. Additionally, the schedule will contain TVA milestones to keep the project team and management informed when submittals will be arriving, thus allowing time for staff to plan and execute the work to be completed. EPM will be used to plan, implement, track and report all WBN Unit 2 activities, including resource allocation and utilization, associated with the project.

The Change Management Plan describes how changes should be requested to the project schedule, analysis and approval of the requested change, and the implementation of the approved change. Once the schedule for the WBN Unit 2 reactivation project has been developed, any changes requested to the schedule should go through the change management process. Proposed changes should be reviewed and assessed based on impact to the overall project schedule. Impacts that affect scope, time, resources or any other factors that might cause a deviation within the baseline project schedule should be evaluated. All approved changes should be communicated to the affected stakeholders once the change has been accepted.

## 10.0 STAKEHOLDER INTERFACES

### 10.1 Advisory Committee on Reactor Safety (ACRS) Interface

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License applications are within the scope of ACRS responsibility. In accordance with 10 CFR 2.102 (b), the Director of NRR will refer the docketed application, as required by law and in such cases as the Commission or Director determine to be appropriate, to the ACRS for its review regarding the hazards of the proposed nuclear facility and the adequacy of proposed reactor safeguards. The ACRS will render to the Commission one or more reports as required by law or as requested by the Commission. The staff will make each report of the ACRS a part of the record of the docketed application, and transmit copies to the appropriate State and local officials.

The NRC staff believes that periodic meetings to update the ACRS on selected technical topics will permit effective and efficient review by the ACRS. Therefore, the staff should request to be put on the agenda periodically to present the results of their review.

#### 10.2 Communication Plan

A communication plan should be maintained to ensure information is communicated to internal and external stakeholders in a timely manner.

#### 10.3 World-Wide Web Page

A page on the NRC's web site should be dedicated to information regarding WBN Unit 2.

The Communication Plan and Web page should be updated on a periodic basis to reflect major developments in the review process.

#### 10.4 Public Meetings

Meetings with the applicant that are open to the public should be held periodically. In general, the agenda for these meetings should be a high level project status meeting and a discussion of future milestones. The location of these meetings may rotate between the site environs, the Regional office and Headquarters.

#### 11.0 PERFORMANCE MEASURES

No performance measures for this office instruction, beyond the above described project management reporting, have been developed at this time.

12.0 PRIMARY CONTACTS

L. Raghavan, Chief  
NRR/DORL/LWPB  
301-415-2429

[Rags.Raghavan@nrc.gov](mailto:Rags.Raghavan@nrc.gov)

Patrick D. Milano  
NRR/DORL/LWPB  
301-415-1457

[Patrick.Milano@nrc.gov](mailto:Patrick.Milano@nrc.gov)

13. RESPONSIBLE ORGANIZATIONS

DORL, DE, DSS, DCI, DLR, DRA, DIRS

14. EFFECTIVE DATE

September 2, 2008

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15. REFERENCES

- (1) Code of Federal Regulations, Title 10, Part 50 (10 CFR Part 50), Sections:
  - 50.30, "Filing of application; oath and affirmation"
  - 50.33, "Contents of applications; general information"
  - 50.34, "Contents of construction permit and operating license applications; technical information"
  - 50.36, "Technical specifications"
  - 50.40, "Common standards"
  - 50.42, "Additional standards for class 103 licenses"
  - 50.43, "Additional standards and provisions affecting class 103 licenses and certifications for commercial power"
  - Subsection (e) to 50.71, "Maintenance of records, making reports"
- (2) 10 CFR Part 51, Section 51.53, "Postconstruction environmental reports"
- (3) 10 CFR Part 2, Section 2.102, "Administrative review of application"
- (4) 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"
- (5) 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material"
- (6) 10 CFR Part 73, "Physical Protection of Plants and Materials," Section 73.21, "Requirements for the protection of safeguards material"
- (7) 10 CFR Part 100, "Reactor Site Criteria"
- (8) NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," July 1981
- (9) NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2," through Supplement 20, issued October 1995
- (10) NUREG-1232, Volume 4, "Safety Evaluation Report on Tennessee Valley Authority: Watts Bar Nuclear Performance Plan, Watts Bar Unit 1," January 1990
- (11) NUREG-0498, "Environmental Statement related to Operation of Watts Bar Nuclear Plant Unit Nos. 1 and 2," December 1978 as supplemented April 1995
- (12) Watts Bar Unit 1 Updated Final Safety Analysis Report, through Amendment 6

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- (13) Watts Bar Units 1 and 2 Final Safety Analysis Report, through Amendment 91
  - (14) NRR Office Instruction LIC-100, Revision 1, "Control of Licensing Bases for Operating Reactors"
  - (15) NRC Office Instruction LIC-101, Revision 3, "License Amendment Review Procedures"
  - (16) "Commission Policy Statement on Deferred Plants," dated October 7, 1987 (52 FR 38077)
  - (17) Staff Requirements Memorandum, dated July 25, 2007, "Staff Requirements – SECY-07-0096 - Possible Reactivation of Construction and Licensing Activities for the Watts Bar Nuclear Plant Unit 2"
  - (18) Regulatory Guide 1.70, "Standard Form and Content of Safety Analysis Reports for Nuclear Power Plants"
  - (19) Management Directive 9.27, "Organization and Functions of Office of Nuclear Reactor Regulation"
  - (20) Inspection Manual Chapter (IMC) 2512, "Light Water Reactor Inspection Program - Construction Phase," and IMC 2517, "Watts Bar Unit 2 Construction Inspection Program"
  - (21) Office Instruction ADM-100, Revision 3, "Preparing and Maintaining NRR Office Instructions"
  - (22) Office Instruction ADM-200, Revision 10, "Delegation of Signature Authority"
  - (23) Office Instruction LIC-101, Revision 3, "License Amendment Review Procedures"
  - (24) Office Instruction LIC-200, Revision 1, "Standard Review Plan (SRP) Process"
  - (25) Office Instruction LIC-201, Revision 3, "NRR Support to the Hearing Process"
  - (26) NRC letter to TVA, dated May 8, 2008, "Watts Bar Nuclear Plant, Unit 2 – Assessment of Remaining Operating License Application Review Scope and Requests for Additional Information"
  - (26) NRC letter to TVA, dated May 28, 2008, "Watts Bar Nuclear Plant, Unit 2 – Status of Generic Communications for Review"

Enclosures:

Appendix A - Change History

Appendix B - Listing of SER Sections, with Lead Technical Branch





Appendix B  
Watts Bar Nuclear Plant Unit 2  
Safety Evaluation Review Responsibilities

| <u>Branch</u> | <u>SER</u> | <u>Title</u>   |
|---------------|------------|--|
| AADB          | 2.1.1      | <b>Site Location and Description</b>   |
| AADB          | 2.1.2      | <b>Exclusion Area Authority and Control</b>  |
| AADB          | 2.1.3      | <b>Population Distribution</b>   |
| AADB          | 2.2.1      | <b>Transportation Routes</b>   |
| AADB          | 2.2.2      | <b>Nearby Facilities</b>   |
| AADB          | 2.2.3      | <b>Conclusions</b>   |
| AADB          | 2.3.1      | <b>Regional Climatology</b>  |
| AADB          | 2.3.2      | <b>Local Meteorology</b>   |
| AADB          | 2.3.3      | <b>Onsite Meteorological Measurements Program</b>  |
| AADB          | 2.3.4      | <b>Short-Term (Accident) Atmospheric Diffusion Estimates</b>                                     |
| AADB          | 2.3.5      | <b>Long-Term (Routine) Diffusion Estimates</b>   |
| AADB          | 6.4.0      | <b>Control Room Habitability</b>   |
| AADB          | 6.5.1      | ESF Atmosphere Cleanup Systems   |
| AADB          | 11.1.0     | Summary Description  |
| AADB          | 11.7.1     | <b>Wide Range Noble Gas, Iodine, and Particulate Effluent Monitors (II.F.1(1) and II.F.1(2))</b> |
| AADB          | 11.7.2     | <b>Primary Coolant Outside Containment (III.D.1.1)</b>   |
| AADB          | 15.4.0     | Radiological Consequences of Accidents   |
| AADB          | 15.4.1     | Loss-of-Coolant Accident   |
| AADB          | 15.4.2     | Main Steamline Break Outside of Containment  |
| AADB          | 15.4.3     | Steam Generator Tube Rupture   |
| AADB          | 15.4.4     | Control Rod Ejection Accident  |
| AADB          | 15.4.5     | Fuel-Handling Accident   |
| AADB          | 15.4.6     | Failure of Small Line Carrying Coolant Outside Containment                                       |
| AFPB          | 9.5.1      | <b>Fire Protection</b>   |
| AFPB          | 23.2.7     | <b>Fire Protection</b>   |
| APOB          | 17.6.0     | <b>Maintenance Rule</b>  |
| CPNB          | 3.6.3      | <b>Leak-Before-Break Evaluation Procedures</b>   |
| CPNB          | 4.5.1      | <b>Control Rod Drive Structural Materials</b>  |
| CPNB          | 5.2.3      | Reactor Coolant Pressure Boundary Materials  |

Branch has lead responsibility for Items in bold.

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| <u>Branch</u> | <u>SER</u>    | <u>Title</u>  |
|---------------|---------------|---|
| CPNB          | 5.2.4         | <b>RCS Pressure Boundary Inservice Inspection and Testing</b>     |
| CPNB          | 6.6.0         | <b>Inservice Inspection of Class 2 and 3 Components</b>           |
| CPNB          | 10.3.3        | <b>Steam and Feedwater System Materials</b>                       |
| CPNB          | 23.2.9        | <b>Heat Code Traceability</b>                                     |
| CPNB          | 23.2.18       | <b>Welding</b>  |
| CPTB          | 3.9.6         | <b>Inservice Testing of Pumps and Valves</b>                      |
| CSGB          | 3.13.0        | <b>Threaded Fasteners - ASME Code Class 1, 2, and 3 [SRP TOC]</b> |
| CSGB          | 5.4.2         | <b>Steam Generators</b>   |
| CSGB          | 6.1.3         | <b>Postaccident Emergency Cooling Water Chemistry</b>             |
| CSGB          | 6.4.0         | <b>Control Room Habitability</b>                                  |
| CSGB          | 6.5.2         | Fission Product Cleanup System                                    |
| CSGB          | 9.1.1         | New Fuel Storage  |
| CSGB          | 9.1.2         | Spent Fuel Storage  |
| CSGB          | 9.1.3         | Spent Fuel Pool Cooling and Cleanup System                        |
| CSGB          | 9.2.3         | Demineralized Water Makeup System                                 |
| CSGB          | 9.3.2         | Process Sampling System   |
| CSGB          | 9.3.4         | Chemical and Volume Control System                                |
| CSGB          | 9.5.4         | Emergency Diesel Engine Fuel Oil Storage and Transfer System      |
| <b>CSGB</b>   | <b>10.3.4</b> | <b>Secondary Water Chemistry</b>                                  |
| <b>CSGB</b>   | <b>10.4.6</b> | <b>Condensate Cleanup System</b>                                  |
| <b>CSGB</b>   | <b>10.4.8</b> | <b>Steam Generator Blowdown System</b>                            |
| <b>CSGB</b>   | <b>23.3.7</b> | <b>Microbiologically Induced Corrosion (MIC)</b>                  |
| CVIB          | 4.5.2         | <b>Reactor Internals and Core Support Materials</b>               |
| CVIB          | 5.2.3         | <b>Reactor Coolant Pressure Boundary Materials</b>                |
| CVIB          | 5.2.4         | RCS Pressure Boundary Inservice Inspection and Testing            |
| <b>CVIB</b>   | <b>5.3.1</b>  | <b>Reactor Vessel Materials</b>                                   |
| <b>CVIB</b>   | <b>5.3.2</b>  | <b>Pressure-Temperature Limits</b>                                |
| <b>CVIB</b>   | <b>5.3.3</b>  | <b>Reactor Vessel Integrity</b>                                   |
| <b>CVIB</b>   | <b>5.4.1</b>  | <b>Reactor Coolant Pumps</b>                                      |

Branch has lead responsibility for Items in bold.

Appendix B  
Watts Bar Nuclear Plant Unit 2  
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| <u>Branch</u> | <u>SER</u> | <u>Title</u>   |
|---------------|------------|--|
| CVIB          | 6.1.1      | <b>Metallic Materials</b>  |
| CVIB          | 6.1.2      | <b>Organic Materials</b>   |
| CVIB          | 6.2.7      | <b>Fracture Prevention of Containment Pressure Boundary</b>                    |
| CVIB          | 10.2.2     | Turbine Disc Integrity   |
| DE-AT         | 23.7.0     | <b>Employee Concerns</b>   |
| DE-AT         | 23.8.0     | <b>Allegations</b>   |
| DORL          | 1.0.0      | <b>Introduction and General Discussion</b>                                     |
| DORL          | 1.1.0      | <b>Introduction</b>  |
| DORL          | 1.1.1      | <b>Metrication</b>   |
| DORL          | 1.1.2      | <b>Proprietary Information</b>   |
| DORL          | 1.1.4      | <b>Additional Information</b>  |
| DORL          | 1.2.0      | <b>General Design Description</b>  |
| DORL          | 1.3.0      | <b>Comparison With Similar Facility Designs</b>                                |
| DORL          | 1.3.1      | <b>Comparison With the Sequoyah Nuclear Plant</b>                              |
| DORL          | 1.3.2      | <b>Comparison With Other Facilities</b>  |
| DORL          | 1.4.0      | <b>Identification of Agents and Contractors</b>                                |
| DORL          | 1.5.0      | <b>Summary of Principal Review Matters</b>                                     |
| DORL          | 1.6.0      | <b>Modifications to the Watts Bar Facility During the Course of NRC Review</b> |
| DORL          | 1.7.0      | <b>Summary of Outstanding Issues</b>   |
| DORL          | 1.8.0      | <b>Confirmatory Issues</b>   |
| DORL          | 1.9.0      | <b>License Conditions</b>  |
| DORL          | 1.10.0     | <b>Unresolved Safety Issues</b>  |
| DORL          | 2.0.0      | <b>Site Envelope</b>   |
| DORL          | 2.1.0      | <b>Geography and Demography</b>  |
| DORL          | 19.0.0     | <b>Report of the Advisory Committee on Reactor Safeguards</b>                  |
| DORL          | 23.0.0     | <b>Nuclear Performance Plan</b>  |
| DORL          | 23.4.1     | <b>Corrective Action Program Plans and Special Programs</b>                    |
| EEEB          | 2.5.6      | Embankments and Dams   |
| EEEB          | 3.1.1      | Conformance With General Design Criteria                                       |

Branch has lead responsibility for Items in bold.

Appendix B  
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Safety Evaluation Review Responsibilities

| <u>Branch</u> | <u>SER</u>    | <u>Title</u>  |
|---------------|---------------|---|
| EEEEB         | 3.1.2         | Conformance With Industry Codes and Standards   |
| EEEEB         | 3.10.0        | Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electrical Equipment |
| <b>EEEEB</b>  | <b>3.11.0</b> | <b>Environmental Qualification of Mechanical and Electrical Equipment</b>                   |
| <b>EEEEB</b>  | <b>8.1.0</b>  | <b>General</b>  |
| <b>EEEEB</b>  | <b>8.2.1</b>  | <b>Compliance With GDC 5</b>  |
| <b>EEEEB</b>  | <b>8.2.2</b>  | <b>Compliance With GDC 17</b>   |
| <b>EEEEB</b>  | <b>8.2.3</b>  | <b>Compliance With GDC 18</b>   |
| <b>EEEEB</b>  | <b>8.2.4</b>  | <b>Evaluation Findings</b>  |
| <b>EEEEB</b>  | <b>8.3.1</b>  | <b>Onsite AC Power System Compliance With GDC 17</b>  |
| <b>EEEEB</b>  | <b>8.3.2</b>  | <b>Onsite DC System Compliance With GDC 17</b>  |
| <b>EEEEB</b>  | <b>8.3.3</b>  | <b>Evaluation Findings</b>  |
| <b>EEEEB</b>  | <b>8.4.0</b>  | <b>Station Blackout</b>   |
| EEEEB         | 9.5.3         | Lighting System   |
| EEEEB         | 9.5.4         | Emergency Diesel Engine Fuel Oil Storage and Transfer System                                |
| EEEEB         | 9.5.5         | Emergency Diesel Engine Cooling Water System  |
| EEEEB         | 9.5.6         | Emergency Diesel Engine Starting Systems  |
| EEEEB         | 9.5.7         | Emergency Diesel Engine Lubricating Oil System  |
| EEEEB         | 9.5.8         | Emergency Diesel Engine Combustion Air Intake and Exhaust System                            |
| <b>EEEEB</b>  | <b>23.2.1</b> | <b>Cable Issues</b>   |
| <b>EEEEB</b>  | <b>23.2.5</b> | <b>Electrical Issues</b>  |
| EEEEB         | 23.2.6        | Equipment Seismic Qualification   |
| <b>EEEEB</b>  | <b>23.3.4</b> | <b>Environmental Qualification Program</b>  |
| <b>EEEEB</b>  | <b>23.3.5</b> | <b>Master Fuse List</b>   |
| EICB          | 3.1.1         | Conformance With General Design Criteria  |
| EICB          | 3.1.2         | Conformance With Industry Codes and Standards   |
| EICB          | 3.11.0        | Environmental Qualification of Mechanical and Electrical Equipment                          |
| EICB          | 5.2.5         | Reactor Coolant Pressure Boundary Leakage Detection   |
| <b>EICB</b>   | <b>7.1.1</b>  | <b>General</b>  |
| <b>EICB</b>   | <b>7.1.2</b>  | <b>Comparison with Other Plants</b>   |

Branch has lead responsibility for Items in bold.

Appendix B  
Watts Bar Nuclear Plant Unit 2  
Safety Evaluation Review Responsibilities

| <u>Branch</u> | <u>SER</u> | <u>Title</u>  |
|---------------|------------|---|
| EICB          | 7.1.3      | <b>Design Criteria</b>  |
| EICB          | 7.2.1      | <b>System Description</b>   |
| EICB          | 7.2.2      | <b>Manual Trip Switches</b>   |
| EICB          | 7.2.3      | <b>Testing of Reactor Trip Breaker Shunt Coils</b>                    |
| EICB          | 7.2.4      | <b>Anticipatory Trips</b>   |
| EICB          | 7.2.5      | <b>Steam Generator Water Level Trip</b>                               |
| EICB          | 7.2.6      | <b>Conclusions</b>  |
| EICB          | 7.3.1      | <b>System Description</b>   |
| EICB          | 7.3.2      | <b>Containment Sump Level Measurement</b>                             |
| EICB          | 7.3.3      | <b>Auxiliary Feedwater Initiation and Control</b>                     |
| EICB          | 7.3.4      | <b>Failure Modes and Effects Analysis</b>                             |
| EICB          | 7.3.5      | <b>IE Bulletin 80-06</b>  |
| EICB          | 7.3.6      | <b>Conclusions</b>  |
| EICB          | 7.4.1      | <b>System Description</b>   |
| EICB          | 7.4.2      | <b>Safe Shutdown from Auxiliary Control Room</b>                      |
| EICB          | 7.4.3      | <b>Conclusions</b>  |
| EICB          | 7.5.1      | <b>System Description</b>   |
| EICB          | 7.5.2      | <b>Post-Accident Monitoring System</b>                                |
| EICB          | 7.5.3      | <b>IE Bulletin 79-27</b>  |
| EICB          | 7.5.4      | <b>Conclusions</b>  |
| EICB          | 7.6.1      | <b>System Description</b>   |
| EICB          | 7.6.2      | <b>Residual Heat Removal System Bypass Valves</b>                     |
| EICB          | 7.6.3      | <b>Upper Head Injection Manual Control</b>                            |
| EICB          | 7.6.4      | <b>Protection Against Spurious Actuation of Motor-Operated Valves</b> |
| EICB          | 7.6.5      | <b>Overpressure Protection During Low Temperature Operation</b>       |
| EICB          | 7.6.6      | <b>Valve Power Lockout</b>  |
| EICB          | 7.6.7      | <b>Cold Leg Accumulator Valve Interlocks and Position Indication</b>  |
| EICB          | 7.6.8      | <b>Automatic Switchover From Injection to Recirculation Mode</b>      |
| EICB          | 7.6.9      | <b>Conclusions</b>  |

Branch has lead responsibility for Items in bold.

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| <u>Branch</u> | <u>SER</u> | <u>Title</u>  |
|---------------|------------|---|
| EICB          | 7.7.1      | <b>System Description</b>   |
| EICB          | 7.7.2      | <b>Safety System Status Monitoring System</b>                                       |
| EICB          | 7.7.3      | <b>Volume Control Tank Level Control System</b>                                     |
| EICB          | 7.7.4      | <b>Pressurizer and Steam Generator Overfill</b>                                     |
| EICB          | 7.7.5      | <b>IE Information Notice 79-22</b>  |
| EICB          | 7.7.6      | <b>Multiple Control System Failures</b>   |
| EICB          | 7.7.7      | <b>Conclusions</b>  |
| EICB          | 7.8.1      | <b>Relief and Safety Valve Position Indication (II.D.3)</b>                         |
| EICB          | 7.8.2      | <b>Auxiliary Feedwater System Initiation and Flow Indication (II.E.1.2)</b>         |
| EICB          | 7.8.3      | <b>Proportional Integral Derivative Control Modification (II.K.3.9)</b>             |
| EICB          | 7.8.4      | <b>Proposed Anticipatory Trip Modification (II.K.3.10)</b>                          |
| EICB          | 7.8.5      | <b>Confirm Existence of Anticipatory Reactor Trip Upon Turbine Trip (II.K.3.12)</b> |
| EICB          | 7.9.0      | <b>Data Communication Systems [SRP TOC]</b>   |
| EICB          | 9.2.1      | Essential Raw Cooling Water and Raw Cooling Water Systems                           |
| EICB          | 9.2.2      | Component Cooling System (Reactor Auxiliaries Cooling Water System)                 |
| EICB          | 9.2.5      | Ultimate Heat Sink  |
| EICB          | 9.3.1      | Compressed Air System   |
| EICB          | 9.3.2      | Process Sampling System   |
| EICB          | 9.3.4      | Chemical and Volume Control System  |
| EICB          | 9.4.1      | Control Room Area Ventilation System  |
| EICB          | 9.4.5      | Engineered Safety Features Ventilation System                                       |
| EICB          | 9.5.2      | Communication Systems   |
| EICB          | 10.3.0     | Main Steam Supply System  |
| EICB          | 10.4.2     | Main Condenser Evacuation System  |
| EICB          | 10.4.4     | Turbine Bypass System   |
| EICB          | 10.4.5     | Condenser Circulating Water System  |
| EICB          | 10.4.7     | Condensate and Feedwater Systems  |
| EICB          | 10.4.8     | Steam Generator Blowdown System   |
| EICB          | 10.4.9     | Auxiliary Feedwater System  |

**Branch has lead responsibility for Items in bold.**

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| <u>Branch</u> | <u>SER</u>    | <u>Title</u>  |
|---------------|---------------|---|
| EICB          | 11.5.0        | Process and Effluent Radiological Monitoring and Sampling Systems                                     |
| EICB          | 23.2.11       | Instrument Lines  |
| <b>EMCB</b>   | <b>2.4.1</b>  | <b>Introduction</b>   |
| <b>EMCB</b>   | <b>2.4.2</b>  | <b>Hydrologic Description</b>   |
| <b>EMCB</b>   | <b>2.4.3</b>  | <b>Flood Potential</b>  |
| <b>EMCB</b>   | <b>2.4.4</b>  | <b>Local Intense Precipitation in Plant Area</b>  |
| <b>EMCB</b>   | <b>2.4.5</b>  | <b>Roof Drainage</b>  |
| <b>EMCB</b>   | <b>2.4.6</b>  | <b>Ultimate Heat Sink</b>   |
| <b>EMCB</b>   | <b>2.4.7</b>  | <b>Groundwater</b>  |
| <b>EMCB</b>   | <b>2.4.8</b>  | <b>Design Basis for Subsurface Hydrostatic Loading</b>  |
| <b>EMCB</b>   | <b>2.4.9</b>  | <b>Transport of Liquid Releases</b>   |
| <b>EMCB</b>   | <b>2.4.10</b> | <b>Flooding Protection Requirements and Technical Specifications</b>                                  |
| <b>EMCB</b>   | <b>2.5.1</b>  | <b>Geology</b>  |
| <b>EMCB</b>   | <b>2.5.2</b>  | <b>Seismology</b>   |
| <b>EMCB</b>   | <b>2.5.3</b>  | <b>Surface Faulting</b>   |
| <b>EMCB</b>   | <b>2.5.4</b>  | <b>Stability of Subsurface Materials and Foundations</b>  |
| <b>EMCB</b>   | <b>2.5.5</b>  | <b>Stability of Slopes</b>  |
| <b>EMCB</b>   | <b>2.5.6</b>  | <b>Embankments and Dams</b>   |
| <b>EMCB</b>   | <b>3.0.0</b>  | <b>Design of Structures, Components, Equipment, and Systems</b>                                       |
| <b>EMCB</b>   | <b>3.1.1</b>  | <b>Conformance With General Design Criteria</b>   |
| <b>EMCB</b>   | <b>3.1.2</b>  | <b>Conformance With Industry Codes and Standards</b>  |
| <b>EMCB</b>   | <b>3.2.1</b>  | <b>Seismic Qualification</b>  |
| <b>EMCB</b>   | <b>3.2.2</b>  | <b>System Quality Group Classification</b>  |
| <b>EMCB</b>   | <b>3.3.1</b>  | <b>Wind Loading</b>   |
| <b>EMCB</b>   | <b>3.3.2</b>  | <b>Tornado Loading</b>  |
| <b>EMCB</b>   | <b>3.4.1</b>  | <b>Flood Protection</b>   |
| <b>EMCB</b>   | <b>3.5.1</b>  | <b>Missile Selection and Description</b>  |
| <b>EMCB</b>   | <b>3.5.3</b>  | <b>Barrier Design Procedures</b>  |
| <b>EMCB</b>   | <b>3.6.2</b>  | <b>Determination of Break Locations and Dynamic Effects Associated with the Postulated Rupture of</b> |

Branch has lead responsibility for Items in bold.

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| <u>Branch</u> | <u>SER</u> | <u>Title</u>   |
|---------------|------------|--|
| EMCB          | 3.7.1      | <b>Seismic Input</b>   |
| EMCB          | 3.7.2      | <b>Seismic Analysis</b>  |
| EMCB          | 3.7.3      | <b>Seismic Subsystem Analysis</b>  |
| EMCB          | 3.7.4      | <b>Seismic Instrumentation</b>   |
| EMCB          | 3.8.1      | <b>Steel Containment</b>   |
| EMCB          | 3.8.2      | <b>Concrete and Structural Steel Internal Structures</b>   |
| EMCB          | 3.8.3      | <b>Other Seismic Category I Structures</b>   |
| EMCB          | 3.8.4      | <b>Foundations</b>   |
| EMCB          | 3.9.1      | <b>Special Topics for Mechanical Components</b>  |
| EMCB          | 3.9.2      | <b>Dynamic Testing and Analysis of Systems, Components, and Equipment</b>                          |
| EMCB          | 3.9.3      | <b>ASME Code Class 1, 2, and 3 Components, Component Structures, and Core Support Structures</b>   |
| EMCB          | 3.9.4      | <b>Control Rod Drive Systems</b>   |
| EMCB          | 3.9.5      | <b>Reactor Pressure Vessel Internals</b>   |
| EMCB          | 3.10.0     | <b>Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electrical Equipment</b> |
| EMCB          | 3.11.0     | Environmental Qualification of Mechanical and Electrical Equipment                                 |
| EMCB          | 5.2.1      | <b>Compliance With Codes and Code Cases</b>  |
| EMCB          | 11.3.0     | Gaseous Waste Management   |
| EMCB          | 23.2.2     | <b>Cable Tray and Tray Supports</b>  |
| EMCB          | 23.2.4     | <b>Electrical Conduit and Conduit Support</b>  |
| EMCB          | 23.2.6     | <b>Equipment Seismic Qualification</b>   |
| EMCB          | 23.2.8     | <b>Hanger and Analysis Update Program</b>  |
| EMCB          | 23.2.9     | Heat Code Traceability   |
| EMCB          | 23.2.10    | <b>Heating, Ventilation, and Air-Conditioning Duct and Duct Supports</b>                           |
| EMCB          | 23.2.11    | <b>Instrument Lines</b>  |
| EMCB          | 23.2.16    | <b>Seismic Analysis</b>  |
| EMCB          | 23.3.1     | <b>Concrete Quality Program</b>  |
| EMCB          | 23.3.6     | <b>Mechanical Equipment Qualification</b>  |
| EMCB          | 23.3.10    | <b>Soil Liquefaction</b>   |
| EQVB          | 3.1.1      | Conformance With General Design Criteria   |

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| <u>Branch</u> | <u>SER</u>     | <u>Title</u>  |
|---------------|----------------|---|
| EQVB          | 3.1.2          | Conformance With Industry Codes and Standards       |
| <b>EQVB</b>   | <b>13.4.0</b>  | <b>Review and Audit</b>                             |
| <b>EQVB</b>   | <b>14.0.0</b>  | <b>Initial Test Program</b>                         |
| <b>EQVB</b>   | <b>17.1.0</b>  | <b>General</b>                                      |
| <b>EQVB</b>   | <b>17.2.0</b>  | <b>Organization</b>                                 |
| <b>EQVB</b>   | <b>17.3.0</b>  | <b>Quality Assurance Program</b>                    |
| <b>EQVB</b>   | <b>17.4.0</b>  | <b>Conclusions</b>                                  |
| <b>EQVB</b>   | <b>23.2.3</b>  | <b>Design Baseline and Verification Program</b>     |
| <b>EQVB</b>   | <b>23.2.13</b> | <b>QA Records</b>                                   |
| <b>EQVB</b>   | <b>23.2.14</b> | <b>Q-List</b>                                       |
| <b>EQVB</b>   | <b>23.2.15</b> | <b>Replacement Items Program (Piece Parts)</b>      |
| <b>EQVB</b>   | <b>23.2.17</b> | <b>Vendor Information Program</b>                   |
| <b>EQVB</b>   | <b>23.3.11</b> | <b>Use-as-is CAQs</b>                               |
| <b>EQVB</b>   | <b>23.4.2</b>  | <b>Quality Verification Process</b>                 |
| IOLB          | 9.5.1          | Fire Protection                                     |
| <b>IOLB</b>   | <b>13.1.1</b>  | <b>Management and Technical Organization</b>        |
| <b>IOLB</b>   | <b>13.1.2</b>  | <b>Corporate Organization and Technical Support</b> |
| <b>IOLB</b>   | <b>13.1.3</b>  | <b>Plant Staff Organization</b>                     |
| <b>IOLB</b>   | <b>13.2.1</b>  | <b>Licensed Operator Training Program</b>           |
| <b>IOLB</b>   | <b>13.2.2</b>  | <b>Training for Nonlicensed Personnel</b>           |
| <b>IOLB</b>   | <b>13.5.1</b>  | <b>Administrative Procedures</b>                    |
| <b>IOLB</b>   | <b>13.5.2</b>  | <b>Operating and Maintenance Procedures</b>         |
| <b>IOLB</b>   | <b>13.5.3</b>  | <b>NUREG-0737 Items</b>                             |
| <b>IOLB</b>   | <b>14.0.0</b>  | <b>Initial Test Program</b>                         |
| <b>IOLB</b>   | <b>18.0.0</b>  | <b>Control Room Design Review</b>                   |
| <b>IOLB</b>   | <b>18.1.0</b>  | <b>General</b>                                      |
| <b>IOLB</b>   | <b>18.2.0</b>  | <b>Conclusions</b>                                  |
| <b>IOLB</b>   | <b>23.2.12</b> | <b>Prestart Test Program</b>                        |
| <b>IOLB</b>   | <b>23.3.3</b>  | <b>Detailed Control Room Design Review</b>          |

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| <u>Branch</u> | <u>SER</u>    | <u>Title</u>  |
|---------------|---------------|---|
| IOLB          | 23.5.1        | <b>Introduction</b>   |
| IOLB          | 23.5.2        | <b>Organizational and Management Improvements</b>                                     |
| IOLB          | 23.5.3        | <b>Conclusions</b>  |
| IOLB          | 23.6.0        | <b>Operational Readiness</b>  |
| IRIB          | 6.5.3         | Fission Product Control System  |
| IRIB          | 9.3.2         | Process Sampling System   |
| IRIB          | 11.1.0        | Summary Description   |
| IRIB          | 11.2.0        | Liquid Waste Management   |
| IRIB          | 11.3.0        | Gaseous Waste Management  |
| IRIB          | 11.4.0        | Solid Waste Management System   |
| IRIB          | 11.5.0        | Process and Effluent Radiological Monitoring and Sampling Systems                     |
| <b>IRIB</b>   | <b>12.1.0</b> | <b>General</b>  |
| <b>IRIB</b>   | <b>12.2.0</b> | <b>Ensuring that Occupational Radiation Doses Are As Low As Reasonably Achievable</b> |
| <b>IRIB</b>   | <b>12.3.0</b> | <b>Radiation Sources</b>  |
| <b>IRIB</b>   | <b>12.4.0</b> | <b>Radiation Protection Design Features</b>   |
| <b>IRIB</b>   | <b>12.5.0</b> | <b>Dose Assessment</b>  |
| <b>IRIB</b>   | <b>12.6.0</b> | <b>Health Physics Program</b>   |
| <b>IRIB</b>   | <b>12.7.1</b> | <b>Plant Shielding (II.B.2)</b>   |
| <b>IRIB</b>   | <b>12.7.2</b> | <b>High Range Incontainment Monitor (II.F.1(3))</b>                                   |
| <b>IRIB</b>   | <b>12.7.3</b> | <b>Inplant Radioiodine Monitor (III.D.3.3)</b>  |
| <b>IRIB</b>   | <b>23.3.9</b> | <b>Radiation Monitoring System</b>  |
| ITSB          | 16.0.0        | Technical Specifications  |
| <b>NSIR</b>   | <b>13.3.1</b> | <b>Introduction</b>   |
| <b>NSIR</b>   | <b>13.3.2</b> | <b>Evaluation of the Emergency Plan</b>   |
| <b>NSIR</b>   | <b>13.3.3</b> | <b>Conclusions</b>  |
| NSIR          | 13.6.0        | Physical Security Plan  |
| <b>NSIR</b>   | <b>20.0.0</b> | <b>Common Defense and Security</b>  |
| PFPB          | 20.0.0        | Common Defense and Security   |
| <b>PFPB</b>   | <b>21.0.0</b> | <b>Financial Qualifications</b>   |

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| <u>Branch</u> | <u>SER</u>    | <u>Title</u>   |
|---------------|---------------|--|
| PFPB          | <b>22.0.0</b> | <b>Financial Protection and Indemnity Requirements</b>   |
| PFPB          | <b>22.1.0</b> | <b>General</b>   |
| PFPB          | <b>22.2.0</b> | <b>Preoperational Storage of Nuclear Fuel</b>  |
| PFPB          | <b>22.3.0</b> | <b>Operating Licenses</b>  |
| SBPB          | 3.4.1         | Flood Protection   |
| SBPB          | 3.5.1         | Missile Selection and Description  |
| <b>SBPB</b>   | <b>3.5.2</b>  | <b>Structures, Systems, and Components To Be Protected From Externally Generated Missiles</b>              |
| <b>SBPB</b>   | <b>3.6.1</b>  | <b>Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment</b> |
| <b>SBPB</b>   | <b>5.2.5</b>  | <b>Reactor Coolant Pressure Boundary Leakage Detection</b>   |
| <b>SBPB</b>   | <b>9.1.1</b>  | <b>New Fuel Storage</b>  |
| <b>SBPB</b>   | <b>9.1.2</b>  | <b>Spent Fuel Storage</b>  |
| <b>SBPB</b>   | <b>9.1.3</b>  | <b>Spent Fuel Pool Cooling and Cleanup System</b>  |
| <b>SBPB</b>   | <b>9.1.4</b>  | <b>Fuel Handling System</b>  |
| <b>SBPB</b>   | <b>9.2.1</b>  | <b>Essential Raw Cooling Water and Raw Cooling Water Systems</b>   |
| <b>SBPB</b>   | <b>9.2.2</b>  | <b>Component Cooling System (Reactor Auxiliaries Cooling Water System)</b>                                 |
| <b>SBPB</b>   | <b>9.2.4</b>  | <b>Potable and Sanitary Water Systems</b>  |
| <b>SBPB</b>   | <b>9.2.5</b>  | <b>Ultimate Heat Sink</b>  |
| <b>SBPB</b>   | <b>9.2.6</b>  | <b>Condensate Storage Facilities</b>   |
| <b>SBPB</b>   | <b>9.3.1</b>  | <b>Compressed Air System</b>   |
| <b>SBPB</b>   | <b>9.3.2</b>  | <b>Process Sampling System</b>   |
| <b>SBPB</b>   | <b>9.3.3</b>  | <b>Equipment and Floor Drainage System</b>   |
| <b>SBPB</b>   | <b>9.3.4</b>  | <b>Chemical and Volume Control System</b>  |
| <b>SBPB</b>   | <b>9.5.4</b>  | <b>Emergency Diesel Engine Fuel Oil Storage and Transfer System</b>  |
| <b>SBPB</b>   | <b>9.5.5</b>  | <b>Emergency Diesel Engine Cooling Water System</b>  |
| <b>SBPB</b>   | <b>9.5.6</b>  | <b>Emergency Diesel Engine Starting Systems</b>  |
| <b>SBPB</b>   | <b>9.5.7</b>  | <b>Emergency Diesel Engine Lubricating Oil System</b>  |
| <b>SBPB</b>   | <b>9.5.8</b>  | <b>Emergency Diesel Engine Combustion Air Intake and Exhaust System</b>                                    |
| <b>SBPB</b>   | <b>10.1.0</b> | <b>Summary Description</b>   |
| <b>SBPB</b>   | <b>10.2.0</b> | <b>Turbine Generator</b>   |

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| <u>Branch</u> | <u>SER</u> | <u>Title</u>  |
|---------------|------------|---|
| SBPB          | 10.2.1     | <b>Turbine Generator Design</b>   |
| SBPB          | 10.2.2     | <b>Turbine Disc Integrity</b>   |
| SBPB          | 10.3.0     | <b>Main Steam Supply System</b>   |
| SBPB          | 10.3.1     | <b>Main Steam Supply System (up to and including the Main Steam Isolation Valves)</b> |
| SBPB          | 10.3.2     | <b>Main Steam Supply System</b>   |
| SBPB          | 10.4.1     | <b>Main Condenser</b>   |
| SBPB          | 10.4.2     | <b>Main Condenser Evacuation System</b>   |
| SBPB          | 10.4.3     | <b>Turbine Gland Sealing System</b>   |
| SBPB          | 10.4.4     | <b>Turbine Bypass System</b>  |
| SBPB          | 10.4.5     | <b>Condenser Circulating Water System</b>   |
| SBPB          | 10.4.7     | <b>Condensate and Feedwater Systems</b>   |
| SBPB          | 10.4.9     | <b>Auxiliary Feedwater System</b>   |
| SBPB          | 11.2.0     | <b>Liquid Waste Management</b>  |
| SBPB          | 11.3.0     | <b>Gaseous Waste Management</b>   |
| SBPB          | 11.4.0     | <b>Solid Waste Management System</b>  |
| SBPB          | 11.5.0     | <b>Process and Effluent Radiological Monitoring and Sampling Systems</b>              |
| SBPB          | 23.3.8     | <b>Moderate Energy Line Break Flooding</b>  |
| SCVB          | 6.2.1      | <b>Containment Functional Design</b>  |
| SCVB          | 6.2.2      | <b>Containment Heat Removal Systems</b>   |
| SCVB          | 6.2.3      | <b>Secondary Containment Functional Design</b>  |
| SCVB          | 6.2.4      | <b>Containment Isolation System</b>   |
| SCVB          | 6.2.5      | <b>Combustible Gas Control Systems</b>  |
| SCVB          | 6.2.6      | <b>Containment Leakage Testing</b>  |
| SCVB          | 6.4.0      | <b>Control Room Habitability</b>  |
| SCVB          | 6.5.1      | <b>ESF Atmosphere Cleanup Systems</b>   |
| SCVB          | 6.5.2      | <b>Fission Product Cleanup System</b>   |
| SCVB          | 6.5.3      | <b>Fission Product Control System</b>   |
| SCVB          | 6.5.4      | <b>Ice Condenser as a Fission Product Control System</b>                              |
| SCVB          | 9.4.1      | <b>Control Room Area Ventilation System</b>   |

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| <u>Branch</u> | <u>SER</u> | <u>Title</u>  |
|---------------|------------|---|
| SCVB          | 9.4.2      | <b>Fuel Handling Area Ventilation System</b>                    |
| SCVB          | 9.4.3      | <b>Auxiliary and Radwates Area Ventilation System</b>           |
| SCVB          | 9.4.4      | <b>Turbine Building Area Ventilation System</b>                 |
| SCVB          | 9.4.5      | <b>Engineered Safety Features Ventilation System</b>            |
| SCVB          | 11.3.0     | Gaseous Waste Management  |
| SCVB          | 23.3.2     | <b>Containment Cooling</b>                                      |
| SNPB          | 4.2.1      | <b>Description</b>  |
| SNPB          | 4.2.2      | <b>Thermal Performance</b>                                      |
| SNPB          | 4.2.3      | <b>Mechanical Performance</b>                                   |
| SNPB          | 4.2.4      | <b>Surveillance</b>   |
| SNPB          | 4.2.5      | <b>Fuel Design Conclusions</b>                                  |
| SNPB          | 4.3.1      | <b>Design Basis</b>   |
| SNPB          | 4.3.2      | <b>Design Description</b>                                       |
| SNPB          | 4.3.3      | <b>Analytical Methods</b>                                       |
| SNPB          | 4.3.4      | <b>Summary of Evaluation Findings</b>                           |
| SNPB          | 4.4.2      | Design Bases  |
| SNPB          | 4.6.0      | <b>Functional Design of Reactivity Control Systems</b>          |
| SNPB          | 5.2.1      | Compliance With Codes and Code Cases                            |
| SNPB          | 15.3.3     | <b>Feedwater System Pipe Break</b>                              |
| SNPB          | 15.3.4     | <b>Reactor Coolant Pump Rotor Seizure</b>                       |
| SNPB          | 15.3.5     | <b>Reactor Coolant Pump Shaft Break</b>                         |
| SNPB          | 15.4.0     | Radiological Consequences of Accidents                          |
| SNPB          | 15.4.1     | Loss-of-Coolant Accident  |
| SNPB          | 15.4.2     | <b>Main Steamline Break Outside of Containment</b>              |
| SRXB          | 3.0.0      | <b>Design of Structures, Components, Equipment, and Systems</b> |
| SRXB          | 3.1.1      | Conformance With General Design Criteria                        |
| SRXB          | 3.1.2      | Conformance With Industry Codes and Standards                   |
| SRXB          | 4.4.1      | <b>Performance in Safety Criteria</b>                           |
| SRXB          | 4.4.2      | <b>Design Bases</b>   |

Branch has lead responsibility for Items in bold.

Appendix B  
Watts Bar Nuclear Plant Unit 2  
Safety Evaluation Review Responsibilities

| <u>Branch</u> | <u>SER</u> | <u>Title</u>  |
|---------------|------------|---|
| SRXB          | 4.4.3      | <b>Thermal-Hydraulic Design Methodology</b>                           |
| SRXB          | 4.4.4      | <b>Operating Abnormalities</b>  |
| SRXB          | 4.4.5      | <b>Loose Parts Monitoring System</b>                                  |
| SRXB          | 4.4.6      | <b>Thermal-Hydraulic Comparison</b>                                   |
| SRXB          | 4.4.7      | <b>N-1 Loop Operation</b>   |
| SRXB          | 4.4.8      | <b>Instrumentation for Inadequate Core Cooling Detection (II.F.2)</b> |
| SRXB          | 4.4.9      | <b>Summary and Conclusion</b>   |
| SRXB          | 5.2.2      | <b>Overpressure Protection</b>  |
| SRXB          | 5.2.4      | RCS Pressure Boundary Inservice Inspection and Testing                |
| SRXB          | 5.4.3      | <b>Residual Heat Removal System</b>                                   |
| SRXB          | 5.4.4      | <b>Pressurizer Relief Tank</b>  |
| SRXB          | 5.4.5      | <b>Reactor Coolant System Vents (II.B.1)</b>                          |
| SRXB          | 6.3.1      | <b>System Design</b>  |
| SRXB          | 6.3.2      | <b>Evaluation</b>   |
| SRXB          | 6.3.3      | <b>Testing</b>  |
| SRXB          | 6.3.4      | <b>Performance Evaluation</b>   |
| SRXB          | 6.3.5      | <b>Conclusions</b>  |
| SRXB          | 9.3.2      | Process Sampling System   |
| SRXB          | 15.1.0     | <b>General Discussion</b>   |
| SRXB          | 15.2.0     | <b>Normal Operation and Anticipated Transients</b>                    |
| SRXB          | 15.2.1     | <b>Loss of Cooling Transients</b>                                     |
| SRXB          | 15.2.2     | <b>Increased Cooling Transients</b>                                   |
| SRXB          | 15.2.3     | <b>Change in Coolant Inventory Transients</b>                         |
| SRXB          | 15.2.4     | <b>Reactivity and Power Distribution Anomalies</b>                    |
| SRXB          | 15.2.5     | <b>Conclusions</b>  |
| SRXB          | 15.3.0     | <b>Limiting Accidents</b>   |
| SRXB          | 15.3.1     | <b>Loss-of-Coolant Accident</b>                                       |
| SRXB          | 15.3.2     | <b>Steamline Break</b>  |
| SRXB          | 15.3.6     | <b>Anticipated Transients Without Scram</b>                           |

Branch has lead responsibility for Items in bold.

Appendix B  
Watts Bar Nuclear Plant Unit 2  
Safety Evaluation Review Responsibilities

| <u>Branch</u> | <u>SER</u> | <u>Title</u>   |
|---------------|------------|--|
| SRXB          | 15.3.7     | Conclusions  |
| SRXB          | 15.4.0     | Radiological Consequences of Accidents   |
| SRXB          | 15.4.1     | Loss-of-Coolant Accident   |
| SRXB          | 15.4.3     | Steam Generator Tube Rupture   |
| SRXB          | 15.4.4     | Control Rod Ejection Accident  |
| SRXB          | 15.4.5     | Fuel-Handling Accident   |
| SRXB          | 15.4.6     | Failure of Small Line Carrying Coolant Outside Containment   |
| SRXB          | 15.4.7     | Postulated Radioactive Releases as a Result of Liquid Tank Failures                                      |
| SRXB          | 15.5.1     | Thermal Mechanical Report (II.K.2.13)  |
| SRXB          | 15.5.2     | Voiding in the Reactor Coolant System During Transients (II.K.2.17)                                      |
| SRXB          | 15.5.3     | Installation and Testing of Automatic Power-Operated Relief Valve Isolation System (II.K.3.1), Report on |
| SRXB          | 15.5.4     | Automatic Trip of Reactor Coolant Pumps (II.K.3.5)   |
| SRXB          | 15.5.5     | Small-Break LOCA Methods (II.K.3.30) and Plant-Specific Calculations (II.K.3.31)                         |
| SRXB          | 15.6.0     | Relative Risk of Low Power Operation   |