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

June 16, 2008

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

Gentlemen:

In the Matter of) Docket No. 50-391
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 2 - REGULATORY FRAMEWORK FOR THE COMPLETION OF CONSTRUCTION AND LICENSING FOR UNIT 2 - REVISION 1 (TAC NO. MD6311)

References:
1. NRC letter dated May 8, 2008, "Watts Bar Nuclear Plant, Unit 2 – Assessment of Remaining Operating License Application Review Scope and Requests for Additional Information (TAC NO MD6311)"
2. TVA letter dated March 13, 2008, "Watts Bar Nuclear Plant (WBN) – Unit 2 – Regulatory Framework for the Completion of Construction and Licensing Activities for Unit 2 - Restructured Tables"
3. NRC letter dated May 28, 2008, "Watts Bar Nuclear Plant, Unit 2 - Status of Generic Communications for Review (TAC NO. MD8314)"

The purpose of this letter is to respond to NRC's requests for additional information (Reference 1) regarding the initial assessment of the remaining operating license review scope for the Tennessee Valley Authority's (TVA's) WBN Unit 2. TVA's original Regulatory Framework for the completion of construction and licensing activities for WBN Unit 2 was submitted on March 13, 2008 (Reference 2).

In response to NRC's request that TVA address all supplements to NUREG-0847 pertinent to a given topic, TVA has revised the regulatory framework master table originally provided in Reference 2. As part of that revision TVA also incorporated additional references to TVA submittals and NRC Safety Evaluations in the discussion of the topics. TVA has also incorporated the information provided in Reference 3 for Generic Communications, where applicable. Enclosure 3 provides the revised Master Table and a table providing the subsections with changes.

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Enclosure 1 provides the NRC requests for additional information and TVA's responses. Enclosure 2 provides the listing of open actions required for licensing associated with Enclosure 1.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 16th day of June, 2008.

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

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

Enclosures
cc: See page 3

cc (Enclosures):

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Enclosure 1
Response to NRC Requests for Additional Information

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

TVA response:

From the time that the WBN Unit 1 operating license was granted, Final Safety Analysis Report (FSAR) changes have been made in accordance with 10 CFR § 50.71(e) to reflect modifications installed in the plant. As part of the FSAR "red-line" effort, TVA performed an initial review of those WBN Unit 1 FSAR changes to identify and categorize significant changes that will eventually become a part of the combined Unit 1 and Unit 2 FSAR at Unit 2 fuel load. Enclosure 2 of Reference 1 contained a summary matrix of the results of this significance review. Enclosure 3 of Reference 1 provided a description of the review methodology.

As part of the detailed engineering associated with the completion of WBN Unit 2, the Unit 1 modifications to be implemented on Unit 2 will be reviewed for impact against FSAR Amendment 91. TVA will provide amendments to the WBN Unit 2 FSAR for NRC review in accordance with 10 CFR § 50.90 as part of construction completion and licensing. As part of that amendment process, TVA will review the affected NUREG-0847 topics to determine the impact on the previous review. If TVA determines that the status of a NUREG-0847 topic has changed, TVA will submit an amendment to the FSAR for NRC review and concurrence and re-open the topic in the Regulatory Framework table if appropriate.

TVA may install modifications on WBN Unit 2 that are different than were installed on WBN Unit 1. An example of this type of change is the use of the Westinghouse Common Q Post Accident Monitoring System. This system is being installed because the system installed on WBN Unit 1 (ICCM-86 system) is no longer available. This change has been captured in the Regulatory Framework Table, and TVA will submit an FSAR amendment for NRC review and approval when engineering of the modification is complete.

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

TVA response:

TVA provided a list of exemptions, reliefs, and other actions granted for WBN Unit 1 that would be required for WBN Unit 2 construction completion by letter dated October 11, 2007 (Reference 2). The letter and attachment provided the exemption, relief, or other action, the applicability to WBN Unit 2, the approval reference, and a justification. If TVA determines based on discovery or emerging issues that a request for exemption or code relief is appropriate, TVA will submit the request to the NRC for review and concurrence.

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

TVA response:

As discussed above in the response to NRC request 1, modifications to WBN Unit 2 will be reviewed for impact against FSAR Amendment 91 and the affected NUREG-0847 topics. Changes which are implemented on both units for multi-unit operation will be evaluated using the 10 CFR § 50.59 process for the Unit 1 change and evaluated against the FSAR and NUREG-0847 topic for Unit 2. TVA will provide amendments to the WBN Unit 2 FSAR for NRC review in accordance with 10 CFR § 50.90 for changes that are determined to affect Unit 2 or dual unit operations. The Design Baseline Verification Program will also ensure the existence of calculations that are consistent with the safety-related plant design including multi-unit operations.

In addition to the processes described above, TVA is assessing the potential for operational and maintenance differences between WBN Unit 1 and Unit 2 during the development of modifications to be installed in Unit 2. This process is controlled by the Bechtel Engineering Document Construction Release (EDCR) Process which controls the development and installation of permanent equipment in the plant.

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

TVA response:

The population of WBN Unit 2 structures, systems, and component (SSCs) fall into two categories: WBN Unit 2 SSCs that are shared between WBN Unit 1 and Unit 2 (common equipment), and WBN Unit 2 SSCs that were put into the WBN Unit 2 layup program.

The first population consists of structures, systems and components that are shared between WBN Unit 1 and Unit 2 and are in operation supporting Unit 1. This population of SSCs is defined, monitored, trended, and reported in accordance with the Maintenance Rule requirements delineated in TVA Technical Instruction (TI-119) and Standard Program and Process (SPP-6.6). The TVA Maintenance Rule Program monitors the performance or condition of structures, systems, and components, against performance criteria, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended functions. This population is expected to undergo normal age-related degradation while in service supporting WBN Unit 1. TVA believes that application of license renewal process is appropriate to deal with age-related degradation issues associated with this population of SSCs.

The second population representing the WBN Unit 2 SSCs that were put into the WBN Unit 2 layup program is discussed in response to NRC request 4b.

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

TVA response:

TVA is in the process of defining an inspection and restoration process to identify and address WBN Unit 2 SSCs important to safety that were placed in the WBN Unit 2 lay-up program. Component inspection and restoration activities will address actions that are required to ensure the equipment supports the plant design lifetime by reworking or replacing items based on programmatic requirements, vendor recommendations, operational experience or sound technical judgment. Component testing and system Preoperational Test programs serve as the final confirmation of the components restoration. TVA will provide details of this process by September 30, 2008.

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

TVA response:

TVA acknowledges that additional information will be required for the review topics that were not fully resolved for WBN Unit 2 in NUREG-0847 and the supplements. TVA will provide periodic reports at approximately six month intervals on the status of the NUREG-0847 review topics as part of the construction completion and licensing of WBN Unit 2.

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

TVA response:

The attached Tables have been revised to address NUREG-0847 and each of the supplements for a given topic. The Master Table also includes a revision column for ease of review. This issue was entered in TVA's corrective action program.

References:

1. TVA letter dated February 8, 2008," Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Safety Analysis Report (FSAR) Red-Line for Unit 2"

2. TVA letter dated October 11, 2007, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Exemptions, Reliefs, Deviations and Exceptions"

Enclosure 2
Listing of Open Actions Required for Licensing

1. As part of the FSAR amendment process, TVA will review the affected NUREG-0847 topic to determine the impact on the previous review.

2. For those Unit 2 SSCs important to safety that were placed in the WBN Unit 2 layup program, TVA will provide details of the process inspection and restoration of WBN Unit 2 SSCs by September 30, 2008.

3. TVA will provide periodic reports at approximately six month intervals on the status of the NUREG-0847 review topics as part of the construction completion and licensing of WBN Unit 2.

SAFETY EVALUATION REPORT AND SUPPLEMENTS
(NUREG-0847) REVIEW MATRIX
MASTER TABLE

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
1.0 .0		NA	Overview only
1.1 .0		NA	Overview only
1.1 .1		NA	Overview only
1.1 .2		NA	Overview only
1.1 .3		NA	Overview only
1.1 .4		NA	Overview only
1.2 .0		NA	Overview only
1.3 .0		NA	Overview only
1.3 .1		NA	Overview only
1.3 .2		NA	Overview only
1.4 .0		NA	Overview only
1.5 .0		NA	Overview only
1.6 .0		NA	Overview only
1.7 .0		NA	Overview only
1.8 .0		NA	Overview only
1.9 .0		NA	Overview only
1.10 .0		NA	Overview only
2.0 .0	0	C	Approved for both units in SER.
2.1 .0	0	C	Approved for both units in SER.
2.1 .1	0	C	Approved for both units in SER.
2.1 .2	0	C	Approved for both units in SER.
2.1 .3	0	O	SRP requirement. Unit 2 Action: Update FSAR for present and projected population over the lifetime of the plant.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
2.1 .4	0	O	"CONCLUSIONS" left open until all items in subsection are closed.
2.2 .0	0	C	Approved for both units in SER.
2.2 .1	0	O	SRP requirement. Unit 2 Action: Update FSAR for potential external hazards and hazardous materials.
2.2 .2	0	O	SRP requirement. Unit 2 Action: Update FSAR for projected annual number of aircraft flights.
2.2 .3	0	O	"CONCLUSIONS" left open until all items in subsection are closed.
2.3 .0	0	C	Approved for both units in SER.
2.3 .1	0	C	Approved for both units in SER.
2.3 .2	0	C	Approved for both units in SER.
2.3 .3	0	C	See 13.3.3 (Emergency Preparedness Evaluation Conclusions).
2.3 .4	14	C	TVA updated information on portions of the metrology program in FSAR amendment 83. This was reviewed and found acceptable in SSER14.
2.3 .5	14	C	TVA updated information on portions of the metrology program in FSAR amendment 83. This was reviewed and found acceptable in SSER14.
2.4 .0	0	C	Approved for both units in SER.
2.4 .1	0	C	Approved for both units in SER.
2.4 .2	0	C	Approved for both units in SER.
2.4 .3	0	C	Approved for both units in SER.
2.4 .4	0	C	Approved for both units in SER.
2.4 .5	0	C	GL 89-22, "Potential For Increased Roof Load Due to Changes in Maximum Precipitation" – Answer to informal question provided in TVA letter dated December 16, 1981, and subsequently included in FSAR. GL did not require a response. No further action required.
2.4 .6	0	C	Approved for both units in SER.
2.4 .7	0	C	Approved for both units in SER.
2.4 .8	3	C	CONFIRMATORY ISSUE for design basis groundwater level for ERCW pipeline Amendment 50 to the FSAR (May 1, 1984) provided a description of the analysis used to determine the 25-year groundwater level for the ERCW pipeline. Staff closed issue in SSER3.
2.4 .9	0	O	SRP requirement. Unit 2 Action: Update FSAR for present and projected use of local and regional groundwater.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
2.4 .10	0	CT	Staff found flood emergency plan and draft Technical Specifications acceptable in original 1982 SER. Unit 2 Action: Address in Technical Specifications as appropriate.
2.4 .11		NA	Addressed in 2.4.6.
2.4 .12		NA	Addressed in 2.4.7.
2.4 .13		NA	Addressed in 2.4.9.
2.4 .14		NA	Addressed in 2.4.10.
2.5 .0	0	C	Approved for both units in SER.
2.5 .1	0	C	Approved for both units in SER.
2.5 .2	0	C	Approved for both units in SER.
2.5 .3	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
2 . 5 . 4	11	C	CONFIRMATORY ISSUE for design differential settlement of piping and electrical components Analysis was presented to staff in September 1983. Staff found analysis and results acceptable. Staff closed issue in SSER3. --- CONFIRMATORY ISSUE for analysis of sheetpile walls Staff performed audit in September 1982, and determined TVA had used reasonable assumptions. Staff closed issue in SSER3. --- CONFIRMATORY ISSUE for material and geometric damping in soil-structure interaction (SSI) analysis Staff performed audit in September 1982, and determined TVA had used reasonable assumptions. Staff closed issue in SSER3. --- OUTSTANDING ISSUE (1) on liquefaction beneath ERCW pipelines and Class 1E electrical conduit. Amendment 50 to the FSAR (May 1, 1984) provided a description of the underground barriers along the ERCW pipelines. Staff agreed the barriers provide sufficient confinement to any liquefied soil. Staff closed issue in SSER3. --- FSAR amendment 54-63 was reviewed in SSER9. NRC determined that the conclusions previously issued in the SER and SSER3 remained unchanged. --- The Special Program (SP) for Soil Liquefaction was reviewed in SSER11. NRC IR 50-390/92-45 and 50-391/92-45 concluded that TVA had correctly implemented the SP and that it was closed. SSER11 accepted the implementation for WBN Unit 1. Per TVA letter dated August 3, 2007, implementation of the Soil Liquefaction SP is complete for both units.
2 . 5 . 5	0	C	Approved for both units in SER.
2 . 5 . 6	0	C	Approved for both units in SER.
2 . 6 . 0	0	C	Approved for both units in SER.
3 . 0 . 0	0	C	Approved for both units in SER.
3 . 1 . 0	0	C	Approved for both units in SER.
3 . 1 . 1	0	C	Approved for both units in SER.
3 . 1 . 2	0	C	Approved for both units in SER.
3 . 2 . 0	14	C	In SSER14, the staff reviewed revisions to Table 3.2-2, "Summary of Criteria - Mechanical System Components", and found the table acceptable.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.2.1	8	C	CONFIRMATORY ISSUE for seismic classification of structures, systems, and components important to safety The staff reviewed Amendment 49 to FSAR and actions implemented by TVA to address ERCW seismic classification in SSER3 and found them acceptable, pending verification of actions. Staff closed issue on ERCW seismic category upgrade and seismic classification in SSER5. --- CONFIRMATORY ISSUE for ERCW upgrade to seismic category 1 Staff verified that required portion of ERCW had been upgraded or replaced satisfactorily in SSER5 and closed this issue. --- In SSER6, the staff addressed and resolved an issue on Category I boundary. --- OUTSTANDING ISSUE involving seismic classification of cable trays and conduits In SSER6, staff identified an issue on seismic classification of cable trays and conduits being categorized as I(L). In its May 8, 1991, letter, TVA proposed to analyze conduits as Seismic Category I subsystems. Additionally, in a September 18, 1991 letter, TVA agreed to perform cable tray qualification using conventional linear elastic analysis methods, considering nonlinear response behavior on a case-by-case basis and to submit these cases to the staff for approval. The staff resolved this issue in SSER8.
3.2.2	9	OV	Section 3.2.2 of SSER3 discusses confirmatory issues for seismic classification and upgrade of ERCW that are already included in 3.2.1. --- Staff accepted implementation of Heat Code Traceability CAP for Unit 1 in SSER7. Unit 2 Action: Complete CAP using Unit 1 approach. --- Staff reviewed updated information in Amendment 68 on use of codes and standards in SSER9 and stated that prior conclusions were unchanged.
3.3.0	0	C	Approved for both units in SER.
3.3.1	0	C	Approved for both units in SER.
3.3.2	0	C	Approved for both units in SER.
3.4.0	0	C	Approved for both units in SER.
3.4.1	0	C	Approved for both units in SER.
3.4.2		NA	Addressed in 3.4.1.
3.5.0	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 5 . 1	14	C	In SSER9, the staff determined that a new spectrum used for the design of a new DG building and other Category I structures built after 1979 was acceptable. In SSER14, clarification in Amendment 79 on internal missile sources was reviewed and did not change prior conclusions. Staff also reviewed revised information on turbine missiles and concluded that impact of potential missiles was insignificant.
3 . 5 . 2	2	C	CONFIRMATORY ISSUE for modifications to protect Diesel Generators TVA submitted a proposed design modification for installation of a reinforced concrete curb around the diesel exhaust stacks to protect them from damage in a letter dated November 24, 1982. The staff found this acceptable and closed this issue in SSER2.
3 . 5 . 3	0	C	Approved for both units in SER.
3 . 6 . 0	11	OV	In SSER6, the staff accepted TVA approaches involving arbitrary intermediate breaks, determination of intermediate break locations and analysis of jet impingement loads. In SSER11, the staff reviewed results of the MELB Special Program and determined that the conclusion in the SER finding plant design for protection against piping failures outside containment was still valid. Unit 2 Action: Complete Special Program using the Unit 1 approach.
3 . 6 . 1	14	C	OUTSTANDING ISSUE involving main steam line break (MSLB) outside containment In a letter dated November 30, 1992, TVA submitted a new evaluation for both Units 1 and 2 accounting for increased environmental temperatures in the MSVV rooms due to release of superheated steam and later submitted, by letter dated March 28, 1994, additional information related to the assumptions made in this analysis for both units. The staff reviewed this information together with their detailed evaluation and acceptance of the same methodology applied at Sequoyah and concluded that the MSLB analysis for the WBN MSVV rooms, including the effects of superheated steam, was acceptable and identified this issue as resolved in SSER14. --- In SSER14, the staff reviewed the construction of response spectra for the steel containment vessel resulting from the compartment pressure transients caused by pipe break and TVA modeling of the SCV for both units (see TVA letter dated December 30, 1993) and concluded that the methodology for obtaining shell dynamic displacements and construction of spectra were acceptable.
3 . 6 . 2	14	C	The 3.6.2 discussion in SSER14 on response spectra for the SCV refers to the evaluation provided in 3.6.1.
3 . 6 . 3	12	C	New section in SRP 1987. Approved for both units in Appendix J of SSER5. The staff concluded in SSER12 that TVA may eliminate pressurizer surge line rupture from the design basis for Units 1 and 2.
3 . 7 . 0	6	OV	The staff concluded in SSER6 that FSAR section 3.7 which was added to describe Set A, Set B and Set C seismic analysis was consistent with the Seismic Analysis CAP. Unit 1 Action: Complete CAP using the Unit 1 approach.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 7 . 1	16	OV	OUTSTANDING ISSUE involving update of FSAR for seismic design issues The staff reviewed FSAR Amendment 68 and found that required changes had been incorporated into the FSAR, as committed to in TVA letter dated December 18, 1990, for Units 1 and 2, and issue was deemed resolved in SSER6. SSER9 stated the Seismic Analysis CAP was acceptably implemented for Unit 1. SSER16 discusses use of a vertical PGA of .15g rather than .18g for Set B spectra and determined that it was acceptable. Unit 2 Action: Complete CAP using Unit 1 approach.
3 . 7 . 2	16	OV	3.7.2.1.2: OUTSTANDING ISSUE involving mass eccentricity In a letter dated May 8, 1991, for Units 1 and 2, TVA provided clarification that actual mass eccentricities from such items as equipment hatch and lock used in evaluating the steel containment vessel for an earthquake load were replaced by a 5% accidental eccentricity. This was demonstrated to be conservative. TVA also proposed a revision to the FSAR to document this change. The staff found this acceptable and resolved this issue in SSER8. --- 3.7.2.1.2: OUTSTANDING ISSUE involving comparison of Set A vs. Set B response The staff considered this item (opened in SSER6) resolved in SSER11 based on audits and inspections since SSER6. Unit 2 Action: Complete Seismic Analysis CAP using the Unit 1 approach. --- In SSER16, the staff discussed the review and acceptability of the NSSS-ICS modeling for seismic analysis.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.7 .3	12	OV	OUTSTANDING ISSUE involving number of peak cycles to be used for OBE In SSER6, the staff identified an issue involving the number of peak cycles to be used for OBE. In a letter dated May 8, 1991, for both units, TVA proposed to revise the FSAR for ASME Section III Class I piping analysis to include the assumption of 5 OBEs and 1 SSE and a minimum of 10 peak stress cycles per event. The staff accepted this in SSER8. --- OUTSTANDING ISSUE involving use of code cases, damping factors for conduit and use of worst case, critical case and bounding case In SSER6, the staff identified outstanding issues involving code case use, damping factors for conduit and use of worst case, critical case and bounding case. Deficiencies identified in the use of worst case, critical case and bounding calculations were resolved in IR 50-390/93-201, and this issue was considered resolved for Unit 1 in SSER12. Unit 2 Action: Addressed in CAP/SP. The Unit 1 approach will be used for Unit 2. --- OUTSTANDING ISSUE involving 1.2 multi mode factor In SSER6, the staff identified an issue involving a 1.2 multi-mode factor. In SSER8, the staff continued to review the use of a multi-mode factor of 1.2. The staff reviewed verification studies performed by TVA to justify the use of a 1.2 multi-mode factor in seismic evaluation of certain sub systems in SSER8 and SSER9 and, after TVA provided further confirmation of supporting calculations, the use of Complete Quadratic Combinations and validity of two degree of freedom predictions in a letter dated October 10, 1991, for both units, the staff considered this issue resolved in SSER9. --- Conduit Supports Corrective Action Program. Process was reviewed and determined to be acceptable for Unit 1 in SER dated September 1, 1989. Unit 2 Action: Addressed in CAP/SP. The Unit 1 approach will be used for Unit 2. --- In SSER6, the staff reviewed several other seismic analysis considerations including combination of components of earthquake motion, use of load factors in simplified analysis of equipment, consideration of torsional effects of eccentric masses in piping analysis; damping values for cable trays, HVAC and equipment and components; analysis of mounting for equipment and components; and loads and load combinations used in design of HVAC ducts and supports and found them acceptable. In SSER7, the staff reviewed the seismic design of the Refueling Water Storage Tank, the only safety related above ground vertical steel tank in the plant, and found it acceptable.
3.7 .4	0	C	Approved for both units in SER.
3.8 .0	9	C	OUTSTANDING ISSUE involving load combinations and stress allowables In response to staff concerns regarding use of ductility ratio when considering thermally induced stresses, TVA stated in a letter dated April 6, 1992, for both units, that they would use a methodology consistent with SRP 3.8.4 for the design of steel members and use the linear elastic provision of DG-C 1.6.12, Rev. 1, "Evaluation of Steel Structures with Thermal Restraint," except for the energy balance provision of Section C.2.3.1. The staff found this acceptable. TVA also agreed, in its May 8, 1991, letter for both units, that any further sampling of structural welds after the issuance of NCIG-2, Rev. 2 would be to that revision. This issue was resolved in SSER9.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.8.1	3	C	CONFIRMATORY ISSUE - verify buckling methodology In response to staff concern, TVA submitted a letter dated May 16, 1984, for both units, stating that TVA calculations already accounted for new information from NRC-sponsored research programs, particularly information concerning reinforcement around shell (vessel) opening. Based on their review of the response, the staff closed this issue in SSER3.
3.8.2	7	C	The staff accepted implementation of the Concrete Quality Special Program for Unit 1 in SSER7. This program is considered closed for Unit 2 based on the work performed for Unit 1. The was identified in a TVA letter dated August 3, 2007, WBN - Unit 2 - Reactivation of Construction Activities
3.8.3	16	C	The staff reviewed materials, allowable stresses and load cases for the watertight equipment hatch cover in an FSAR Table in Amendment and found them acceptable for both units in SSER14. The staff reviewed allowable stresses for Category I structural steel and found them acceptable for both units in SSER16.
3.8.4	0	C	Approved for both units in SER.
3.9.0	0	C	Approved for both units in SER.
3.9.1	13	OV	OUTSTANDING ISSUE involving assumption in piping analysis for water-hammer due to check valve slam In SSER6, the NRC expressed concern regarding TVA's piping analysis that postulated failure of certain supports, TVA submitted an August 4, 1992, letter stating that, where possible, supports were upgraded in the analysis to maintain structural integrity during the postulated loading scenario. The issue was resolved in SSER13. Unit 2 Action: Modify supports as needed.
3.9.2	14	C	The staff reviewed "Pre-operational Vibration and Dynamic Effects Testing on Piping", and found this area acceptable in SSER14.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 9 . 3	15	OV	3.9.3.1: OUTSTANDING ISSUE involving use of experience data to qualify category I(L) piping The staff identified a concern regarding the use of experience data as a method of seismic qualification of Category I(L) piping in SSER6. TVA stated in a letter dated December 18, 1990 for both units, that it was performing a verification program to validate the original seismic design basis for Category I(L) piping, including a screening criteria based on earthquake experience data to identify items requiring further evaluation and bounding case analysis to demonstrate the conservatism of the screening criteria. In a September 20, 1991, for both units, letter, TVA provided revised criteria for the bounding case analysis. Based on the staff's evaluation, the issue was considered resolved in SSER8. --- 3.9.3.3: LICENSE CONDITION - Relief and safety valve testing (II.D.1) Staff found TVA approach in response to this issue, using information from EPRI valve test program and performing modifications to safety and relief discharge piping and supports, was acceptable. Issue was considered resolved in SSER3. --- 3.9.3.3: OUTSTANDING ISSUE involving operating characteristics of main steam safety valves The staff identified a concern with operating characteristics of main steam safety valves in SSER6. In a letter dated June 21, 1991, TVA responded to NRC concerns regarding the design and installation of MSSVs stated that all valves and piping components were analyzed for all MSSV discharge loads acting simultaneously, combined with other required loads and this was accepted by the staff. In the same letter, TVA also provided the method used to establish the MSSV adjustment ring settings for plant valves and this was acceptable to the staff. This resolved the issue in SSER7. Unit 2 Action: Provide basis of applicability of Unit 1 MSSV analysis to Unit 2. --- 3.9.3.4: CONFIRMATORY ISSUE involving baseplate flexibility and its effect on anchor bolt loads The staff continued to review baseplate flexibility and its effect on anchor bolt loads. The issue remained open in SSER6. The TVA response to this issue, in a letter dated July 26, 1991, for both units, described an update to the previous response for B 79-02 and its civil design standard for concrete anchorage, which incorporated an increase in anchor stiffness and consideration of prying forces for thin baseplates analyzed by hand. The staff determined that this adequately resolved the issue in SSER8. --- 3.9.3.4: OUTSTANDING ISSUE involving stiffness and deflection limits for seismic Category I pipe supports The staff questioned new support stiffness and deflection limits for seismic Category I pipe supports in SSER6. The TVA program to demonstrate that change in design criteria which uses stiffness and deflection limits for Category I pipe supports did not compromise the adequacy of pipe supports, was submitted in a TVA letter dated September 30, 1991, for both units, and was found to be acceptable by the staff and the issue was resolved in SSER8. --- 3.9.3.4: OUTSTANDING ISSUE, staff was awaiting TVA concurrence on their position with respect to margin for critical buckling of pipe supports In a letter dated May 14, 1984, TVA provided results of a sampling program and determined that compressive stresses for pipe supports did not exceed acceptance criteria established by NRC and staff considered this issue resolved in SSER4.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION

			The staff reviewed proposed new criteria for service load combinations and associated stress limits for ASME Code Class 1, 2, and 3 pipe supports in SSER6 and found them acceptable.
			In SSER15, the staff found the response to NUREG-0737, Item II.D.1, "Performance Testing of Relief and Safety Valves," acceptable.
3 . 9 . 4	0	C	Approved for both units in SER.
3 . 9 . 5	0	C	Approved for both units in SER.
3 . 9 . 6	20	OT	LICENSE CONDITION on inservice testing of pumps and valves
			The staff stated that they were reviewing TVA's response to GL 89-04, addressing acceptable IST programs and the license condition on inservice testing of pumps and valves remained open in SSER5. TVA committed to submit a revised ASME Section XI Inservice Pump and Valve Test Program six months before the projected date of operating license issuance in an August 21, 1989, letter. On this basis, the staff considered that the proposed license condition was no longer required in SSER12.

			OUTSTANDING ISSUE required that Technical Specifications include limiting condition for operation that requires plant shutdown or system isolation when leak limits are not met. Staff had not reviewed Technical Specifications.
			The safety evaluation in SSER14 states that the staff did not find any IST issues that would prevent issuance of an operating license for Unit 1. The item was resolved in SSER14.
			Unit 2 Action: Submit Technical Specifications.

			In SSER18, the staff approved a proposed alternative for set pressure testing of the three pressurizer safety relief valves that provide overpressure protection for the reactor coolant system.
			In SSER20, the staff discussed 13 issues that remained to be resolved for the pump and valve inservice testing program and stated that they had been addressed in a manner that complies with the staff's position and they granted relief for an additional relief request.
3 . 9 . 7		NA	Area not addressed in 1981 Standard Review Plan.
3 . 9 . 8		NA	Area not addressed in 1981 Standard Review Plan.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 10 . 0	8	OV	In SSER1 the staff discussed their evaluation of the TVA program for qualification of electrical and mechanical equipment for seismic and other loads, and opened the OUTSTANDING ISSUE involving adequacy of frequency test, peak broadening of response spectra, reconciling actual field mounting by welding vs. testing configuration mounted by bolting and need for surveillance and maintenance programs to address aging. The staff provided a status of these issues in SSER3 and closed peak broadening of response spectra, use of damping values, consideration of nozzle loads, and status of seismic qualification. Other specific issues were closed in this supplement as well. In SSER5, the staff stated that this issue remained open. In a letter dated December 1, 1982, TVA provided justification for single-frequency tests to seismically qualify the Reactor Protection System cabinet. This showed that test response spectra (TRS) were substantially higher than broadened required response spectra (RRS) throughout the required frequency range. The staff evaluated test results and building seismic behavior and considered this aspect of the testing issue closed in SSER6. Staff concerns on the impact of aging on seismic performance were resolved in SSER6 based on discussions with TVA technical personnel and review of maintenance and surveillance instruction manuals. There was a specific issue on installing spacers for the 125V DC vital batteries as was done during qualification testing and required by the manufacturer. The issue was closed in SSER6 when it was determined that spacers had been installed. With regard to the overall issue on adequacy of testing, the staff performed an audit as part of Appendix S of SSER9. This included a review of the TVA approach, criteria and action plan to address effect of directional coupling and verification that acceleration at each device location is less than .95g because relay chatter at higher acceleration levels is expected. TRS enveloped RRS for all directions. The staff found the above to be in accordance with SRP 3.10 and IEEE 344-1975 and closed the issue. For reconciling the impact for equipment actually mounted using welding but tested with mounting by bolting, in-situ test results were provided to NRC (in letters dated April 30, 1985, and January 30, 1986) along with Westinghouse report on seismic qualification by analysis and testing for the main control board. The staff reviewed these results and on the basis of the consistency of all results provided, concluded that the issue was resolved in SSER6. Unit 2 Action: Complete Equipment Seismic Qualification CAP using the Unit 1 approach. --- In SSER4, the staff reviewed an issue on the vibration of deep draft pumps and found it acceptable. In SSER8, the staff accepted a proposed revision to FSAR Section 3.7.3.16 to indicate that the alternative seismic qualification method is to follow the requirements of IEEE Standard 344-1971 and address the guidelines of SRP Section 3.10.
3 . 11 . 0	15	OV	OUTSTANDING ISSUE - TVA program not submitted at time of SER The EQ program was submitted after issuance of the SER. It was reviewed and found acceptable in SSER15. Unit 2 Action: Complete EQ Special Program.
3 . 12 . 0		NA	Addressed in 3.9.1 through 3.9.3.
3 . 12 . 1		NA	Addressed in 3.9.1 through 3.9.3.
3 . 12 . 2		NA	Addressed in 3.9.1 through 3.9.3.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 12 . 3		NA	Addressed in 3.9.1 through 3.9.3.
3 . 12 . 4		NA	Addressed in 3.9.1 through 3.9.3.
3 . 12 . 5		NA	Addressed in 3.9.1 through 3.9.3.
3 . 12 . 6		NA	Addressed in 3.9.1 through 3.9.3.
3 . 13 . 0		NA	Area not addressed in 1981 Standard Review Plan.
4 . 0 . 0	0	C	Approved for both units in SER.
4 . 1 . 0	0	C	Approved for both units in SER.
4 . 2 . 0	0	C	Approved for both units in SER.
4 . 2 . 1	13	OT	In SSER13, NRC determined that internal fuel rod pressure was not key design information that needed to be included in the WBN Unit 1 Technical Specifications. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 2 . 2	2	OT	CONFIRMATORY ISSUE on cladding collapse calculations The staff reviewed the calculation for the predicted cladding collapse for the most limiting Watts Bar fuel and found it acceptable. Staff closed issue in SSER2. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 2 . 3	13	OT	CONFIRMATORY ISSUE - identify margins and to offset reduction in DNBR due to fuel rod bowing and incorporating residual bow penalty into the Technical Specifications. In SSER2, the staff concluded TVA had an acceptable means of analyzing the effects of fuel rod bowing and determining any residual rod bowing penalties on the departure from nucleate boiling ratio and total peaking power. Staff closed the issue in SSER2. In SSER10, NRC reviewed design loading conditions for the reactor vessel internals and raised an issue on the seismic analysis of the control rod drive mechanisms (CRDMs). TVA's letter dated June 15, 1993, for both units discussed CRDM seismic operability. In SSER13, the NRC documented that concerns related to CRDM seismic qualification had been resolved. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 2 . 4	0	C	Approved for both units in SER.
4 . 2 . 5	0	OT	"FUEL DESIGN CONCLUSIONS" left open until all items in subsection are closed. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 3 . 0	0	C	Approved for both units in SER.
4 . 3 . 1	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
4 . 3 . 2	15	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle. --- In SSER15, NRC reviewed TVA's proposed changes to the FSAR from a reanalysis of Pressurized Thermal Shock. The analysis was subsequently incorporated into the FSAR.
4 . 3 . 3	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 3 . 4	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 0	0	C	Approved for both units in SER.
4 . 4 . 1	0	C	Approved for both units in SER.
4 . 4 . 2	12	OT	In SSER12, NRC evaluated a change in reactor coolant flow (upflow) for both units. NRC concluded in a July 28, 1993 letter for both units that the proposed upflow modification was acceptable. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 3	16	OT	OUTSTANDING ISSUE concerning removal of RTD bypass system This outstanding issue was opened in SSER6. Staff issued an SER dated June 13, 1989, for Unit 1 only that approved replacement of the RTD bypass system with an Eagle-21 microprocessor system for monitoring reactor coolant temperature. NRC provided their initial assessment of the RTD bypass removal for WBN Unit 1 in SSER8. This SER was reproduced in SSER8, Appendix R. In SSER16, NRC reviewed the flow measurement uncertainty value for the reactor coolant system. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- In SSER12, NRC evaluated a change in reactor coolant flow (upflow) for both units. NRC concluded that the proposed upflow modification was acceptable. --- In SSER13, NRC reviewed thermal hydraulic methodologies and concluded that the V5H thermal-hydraulic design was acceptable for Watts Bar. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
4 . 4 . 4	13	OT	In SSER13, NRC reviewed TVA's responses to a request for additional information concerning fuel rod bowing and crud buildup for WBN Unit 1. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 5	16	O	CONFIRMATORY ISSUE / LICENSE CONDITION on review of Loose Parts Monitoring System (LPMS) startup report and inclusion of limiting conditions for LPMS in Technical Specifications TVA letters dated February 25, 1982, and November 10, 1982, provided a description of operator training and an evaluation of conformance to RG 1.133. In SSER3, the staff closed the confirmatory issue and opened a license condition to track submittal of the startup test results and the alert level setting. In SSER5, the staff closed the LICENSE CONDITION to a TVA commitment to provide the startup test results and the alert level settings made in a letter dated September 19, 1990, for both units. In SSER16, NRC reviewed additional information and revised commitments associated with the LPMS. For Unit 2 due to obsolescence, TVA will replace the LPMS. Unit 2 Action: Provide the startup test results and the alert level settings.
4 . 4 . 6	0	C	Approved for both units in SER.
4 . 4 . 7	0	CT	"Technical Resolution of Generic Issue B-59-(N-1) Loop Operation in BWRs and PWRs – N-1 Loop operation was addressed in original 1982 SER (4.4.7). Unit 2 Action: Confirm Technical Specifications prohibit (N-1) Loop Operation.
4 . 4 . 8	10	O	LICENSE CONDITION - Detectors for Inadequate core cooling (II.F.2) GL 82-28 / NUREG-0737, II.F.2, "Inadequate Core Cooling Instrumentation System" – In the original SER, the review of the ICC instrumentation was incomplete. The January 24, 1992, letter superseded the previous responses on this issue. TVA letter for Units 1 and 2 dated January 24, 1992, committed to install Westinghouse ICCM-86 and associated hardware. NRC completed the review for Units 1 and 2 in SSER10. For Unit 2 due to obsolescence of the ICCM-86 system, TVA intends to install the Westinghouse Common Q Post-Accident Monitoring System. Unit 2 Action: Install Westinghouse Common Q PAM system.
4 . 4 . 9	0	O	"CONCLUSION" left open until all items in subsection are closed.
4 . 5 . 0	0	C	Approved for both units in SER.
4 . 5 . 1	0	C	Approved for both units in SER.
4 . 5 . 2	0	C	Approved for both units in SER.
4 . 6 . 0	0	C	Approved for both units in SER.
5 . 0 . 0	0	C	Approved for both units in SER.
5 . 1 . 0	6	O	The staff stated that the Eagle 21 microprocessor system was an acceptable replacement of the resistance temperature detector (RTD) bypass system for monitoring reactor cooling temperature in SSER5. In SSER6, the staff noted that TVA had incorporated the information for this new design into the FSAR and said they would track results of the review of this design change as an outstanding issue - Removal of RTD Bypass System (See 4.4.3). Unit 2 Action: Provide additional information for NRC review per 7.2.1

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
5.2.0	0	C	Approved for both units in SER.
5.2.1	0	C	Approved for both units in SER.
5.2.2	15	C	OUTSTANDING ISSUE on staff review of sensitivity study of required safety valve flow rate versus trip parameter TVA letter dated April 18, 1983, provided the safety valve sizing information and information on differences with the reference plant. Staff closed issue in SSER2. --- In SSER15, the staff stated that subject to resolution of NUREG-737 Items II.D.1 (performance testing of relief and safety valves) and II.D.3 (indication of relief and safety valve position), overpressure protection at hot operating conditions will comply with the guidelines of SRP 5.2.2 and requirements of GDC 15. They noted that these items were found to be acceptable.
5.2.3	0	C	Approved for both units in SER.
5.2.4	16	O	LICENSE CONDITION – Inservice inspection (ISI) program The ISI program is required to be submitted within 6 months of the date of issuance of the operating license. The applicable ASME Code edition and addenda are determined by reference to 50.55a(b) 12 months preceding the date of issuance of the OL. The staff reiterated this in SSER10. In SSER12, the LICENSE CONDITION was resolved by a TVA commitment to submit the program within six months after receiving the operating license. Unit 2 action: Submit Unit 2 ISI program. --- OUTSTANDING ISSUE - Unit 2 PSI program submitted April 30, 1990, with a partial listing of relief requests. This item tracked the staff review. In the SER, the preservice inspection program was still under review. NRC reviewed the Unit 1 PSI program in SSERs 10, 12, and 16. Unit 2 Action: Submit Unit 2 PSI program.
5.2.5	12	C	In SSER9, the staff stated that since the UHI system has been eliminated from the WB design , the previous discussion of this system in the SER no longer applies, but the conclusions reached in the SER were still valid. In SSER11, the staff reviewed valve stem leakage and stated that the staff's prior conclusions about valve stem leakage were not affected. In SSER12, the staff retracted the requirement identified in the SER that if leakage is alarmed and confirmed in a flow path with no indicators, then the Technical Specifications require a water inventory material balance be initiated within one hour. The staff also provided a clarification of SER wording related to detection of intersystem leakage through check valves and stated that this did not change prior staff conclusions and the reactor coolant pressure boundary system remains acceptable.
5.2.6	16	C	In SSER16, the staff reviewed the analysis of the RPV and internal components and found the use of the WECAN computer code acceptable.
5.3.0	0	C	Approved for both units in SER.
5.3.1	14	C	The staff reviewed TVA's submittal on reactor vessel irradiation in SSER11 and stated that the WB reactor vessels acceptably satisfy the requirements of 10 CFR 50.61. In SSER14, the staff determined that TVA complied with all the requirements in the current Appendix G, 10 CFR Part 50 without exemptions and the previously approved exemptions were no longer needed.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
5 . 3 . 2	16	OT	OUTSTANDING ISSUE - P-T limits for Unit 2 not provided. Staff will review as part of Unit 2 Technical Specifications. In the original 1982 SER, NRC indicated that the review of the Unit 2 P-T limits would be completed as part of the review of the Unit 2 Technical Specifications. In SSER16, the staff found the pressure temperature limits methodology and the pressure temperature limits report for Unit 1 acceptable. Unit 2 action: Submit P-T limits.
5 . 3 . 3	0	OT	OUTSTANDING ISSUE for staff to complete evaluation of Unit 2 after receipt of P-T limits In the original 1982 SER, NRC indicated that the review of the Unit 2 P-T limits would be completed as part of the review of the Unit 2 Technical Specifications. Unit 2 action: Submit P-T limits.
5 . 4 . 0	0	C	Approved for both units in SER.
5 . 4 . 1	0	C	Approved for both units in SER.
5 . 4 . 2	4	C	5.4.2.2: OUTSTANDING ISSUE for staff to evaluate TVA's proposed resolution to concerns about flow induced vibrations in Model D-3 SGs pre-heat region In the original 1982 SER, the staff concluded that because of the generic problem of tube degradation caused by flow induced vibration in Westinghouse model D steam generators, operation would be limited to 50%. In SSER1, the staff continued to monitor activities associated with proposed modifications to the pre-heater region of the SGs to reduce impingement of water on tubes in this area and eliminate the vibration responsible for wear of the SG tubes. TVA's May 27, 1983, letter committed to implement the NUREG-0966 modifications to address this. In SSER4, the staff concluded the modification was acceptable to operate at 100%. In a letter dated December 17, 2008, TVA confirmed that these modifications were performed for WBN Unit 2.
5 . 4 . 3	11	CI	CONFIRMATORY ISSUE to verify installation of an RHR flow alarm and proper function of dump valves when actuated manually In the SER, staff accepted TVA's commitment to provide, before startup, an RHR flow alarm to alert the operator to initiate alternate cooling modes in the event of loss of RHR pump suction. SSER2 resolved testing of dump valves. The staff verified that the alarm had been installed in SSER5, resolving the confirmatory issue. Unit 2 action: Verify alarm installation. --- CONFIRMATORY ISSUE involving natural circulation test to demonstrate ability to cool down and depressurize the plant, and that boron mixing is sufficient under such circumstances; or, if necessary, other applicable tests before startup after first refueling Branch Technical Position requires a natural circulation test with supporting analysis to demonstrate the ability to cool down and depressurize the plant and that boron mixing is sufficient. Comparison with performance of previously tested plants of similar design is acceptable, if justified. July 11, 1991, TVA letter, for both units, provided an assessment of the acceptability of the Diablo Canyon natural circulation tests to WBN. In SSER10, the NRC found the methods and conclusions acceptable. The staff corrected the wording in SSER10 in SSER11 and stated that this did not alter the conclusion reached.
5 . 4 . 4	0	C	Approved for both units in SER.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
5 . 4 . 5	12	CI	LICENSE CONDITION - NUREG-0737, II.B.1, "Reactor Coolant System Vents" - In the original SER, the NRC found TVA's commitment to install reactor coolant vents acceptable pending verification. In SSER2, the staff found venting guidelines acceptable. Installation was completed for Unit 1 only in SSER5 (IR 390/84-37) and the staff stated that the LC was no longer necessary. In SSER12, the staff included the safety evaluation for the RCSV system. The staff concluded that the high point vent system was acceptable subject to satisfactory completion of seven items that were described as on-going or planned activities associated with completion of the WB licensing process. They stated that none required additional review with respect to the SER nor would they change the SER, provided they were satisfactorily completed. TVA was asked to submit a letter prior to receipt of an OL stating how and when these items were completed. The staff stated that when these items were satisfactorily implemented, the RCSV system would be acceptable. Unit 2 Action: Verify installation of reactor coolant vents.
6 . 0 . 0	0	C	Approved for both units in SER.
6 . 1 . 0	0	C	Approved for both units in SER.
6 . 1 . 1	0	C	Approved for both units in SER.
6 . 1 . 2	0	C	Approved for both units in SER.
6 . 1 . 3	0	C	Approved for both units in SER.
6 . 2 . 0	0	C	Approved for both units in SER.
6 . 2 . 1	15	CT	6.2.1.1: CONFIRMATORY ISSUE involves reviewing analysis that ensures that containment external pressure will not exceed design value of 2.0 psi In the original 1982 SER, NRC indicated it would confirm the contention that containment external pressure transients could not exceed the design value of 2.0 psig. TVA submitted the information June 4, 1982. In SSER3, NRC concluded that the design provided adequate protection against damage from external pressure transients. --- In SSER5, the staff reviewed a revised long term containment analysis for the design basis LOCA in support of a proposed reduction in the limit for minimum allowable weight of ice in the condenser and found it acceptable. Additionally, the staff verified that containment pressure and water level monitors were installed in Unit 1. Thus, License Conditions 6d and 6e were resolved (these are discussed with the other NUREG-0737 issues). In SSER7, the staff resolved their concerns regarding local temperatures near MSLBs inside containment and their impact on equipment qualification. In SSER12, the staff reviewed TVA's basis for deleting requirements for a 20,000 ppm boron concentration in the boron injection tank and determined that this would not significantly affect the environmental response of the containment or the safe shutdown equipment therein. In SSER14, the staff reviewed revisions to a number of containment design parameters and concluded that none affect conclusions reached in the SER or supplements. In SSER15, the staff reviewed the containment barrier seals and associated surveillance requirements and concluded that a revised divider barrier seal surveillance program was appropriate for Unit 1. Unit 2 Action: Review Unit 2 Technical Specifications with respect to divider barrier seal surveillance program.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6.2.2	7	C	In SSER7, the staff determined that hot standby was an acceptable mode following a main steamline break and the containment cooling system modifications were acceptable.
6.2.3	16	C	In SSER16, the staff reviewed Amendment 89 to the FSAR and deletion of the high-radiation signal from the auxiliary building exhaust vent monitors and found it acceptable.
6.2.4	12	CT	CONFIRMATORY ISSUE to install safety grade isolation valves on 1" chemical feed lines joining feedwater lines to main steam line. LICENSE CONDITION – Modification of chemical feedlines In the original 1982 SER, the containment isolation provisions for the main and auxiliary feedwater lines, feedwater bypass lines and the chemical feedlines to the steam generators did not meet GDC 57. This was resolved by FSAR Amendment 55. In SSER5, the NRC concluded that the containment isolation provisions for the main and auxiliary feedwater lines, feedwater bypass lines and the chemical feedlines were acceptable. --- OUTSTANDING ISSUE for NRC to complete review of information provided by TVA to address Containment Purging During Normal Plant Operation LICENSE CONDITION - Containment isolation dependability In the original 1982 SER, NRC concluded that WBN met all the requirements of NUREG-0737, item II.E.4.2 except subsection (6) concerning containment purging during normal operation. In SSER3, the outstanding issue was closed and the LICENSE CONDITION was left open. NRC completed the review and issued a TER for both units on July 12, 1990. NRC concluded that the isolation valves can close against the buildup of pressure in the event of a design basis accident if the lower containment isolation valves are physically blocked to an opening angle of 50 degrees or less. (SSER5) Unit 2 Action: Reflect valve opening restriction in the Technical Specifications. --- OUTSTANDING ISSUE involving containment isolation using closed systems This outstanding issue was opened in SSER7. In SSER12, the NRC concluded that the systems in question were "closed loops outside containment" and reaffirmed the previous conclusion of acceptability.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 2 . 5	8	O	OUTSTANDING ISSUE for review of TVA provided additional information relative to discussion added to FSAR to address analysis of the production and accumulation of hydrogen within containment following onset of a LOCA In the original 1982 SER, NRC indicated that additional information was required concerning the analysis of the production and accumulation of hydrogen within the containment during a design basis LOCA. This information was provided in FSAR amendments and evaluated by NRC in SSER4. In SSER4, the NRC concluded that the design of the combustible gas control system was acceptable and the outstanding issue closed. Unit 2 Action - The hydrogen recombiners will be removed from the Unit 2 design and licensing basis based on 10 CFR 50.44 (final rule September 16, 2003) and abandoned in place. This portion has a status of Open. ---------- LICENSE CONDITION – (6f) Accident monitoring instrumentation II.F.1 – containment hydrogen In SSER5, NRC closed the LICENSE CONDITION for Unit 1 only (IR 390/84-85). Unit 2 Action: Verify installation of containment hydrogen accident monitoring instrumentation. This portion has a status of Closed/Implementation only per NRC May 28, 2008, letter. ---------- LICENSE CONDITION – (9) Hydrogen control measures In the original 1982 SER, an LC was raised to track resolution of Unresolved Safety Issue A-48, "Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment." In SSER8, the NRC reviewed the hydrogen mitigation system (igniters) and concluded it met the requirements of the final rule {10 CFR 50.44(c)(3)}.
6 . 2 . 6	19	C	In SSER4, the staff approved exemption from certain requirements of Appendix J to 10 CFR 50 for both units. In SSER19, the staff found a revised schedule for the exemption approved in SSER4 acceptable. In SSER5, the staff found there was no radiological consequence to an increase in the bypass leakage rate for the emerging gas treatment system and found the increase acceptable.
6 . 2 . 7	4	C	CONFIRMATORY ISSUE for TVA to confirm that the lowest temperatures which will be experienced by the limiting materials of the reactor containment pressure boundary under the conditions cited by GDC 51 will be in compliance with the temperatures identified in the staff's analysis of fracture toughness requirements for load bearing component of the containment system In SSER4, NRC reviewed the confirmatory information submitted and concluded for both units that the reactor containment pressure boundary materials will behave in a non-brittle manner and the requirements of GDC 51 were satisfied. NRC provided the technical basis in Appendix H of SSER4.
6 . 3 . 0	0	C	Approved for both units in SER.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 3 . 1	11	OT	OUTSTANDING ISSUE - involving removal of upper head injection system The Upper Head Injection (UHI) system design was approved in the original 1982 SER. TVA letter dated September 19, 1985, informed NRC that UHI would not be installed on Unit 2. The staff stated in SSER6 that they were continuing to review TVA's submittal. In SSER7, NRC concluded it was acceptable to delete UHI from both units. In SSER11, the staff stated that the revision of the design code for ECCS piping from B31.1 to ASME Section III did not change the conclusions made in the SER and previous SSERs. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
6 . 3 . 2	5	OT	In SSER5, the staff reviewed TVA's approach to maintaining ECCS effectiveness by ensuring that no single failure would be able to energize the coils of the valve operators and found it acceptable. The staff also reviewed TVA's response to Issue 4 of NUREG-0138, Resequencing of ECCS loads following SI signal reset followed by a loss of offsite power. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
6 . 3 . 3	9	OT	OUTSTANDING ISSUE - involving containment sump screen design In the original 1982 SER, the staff approved the proposed sump design in the FSAR. A deviation between the installed and proposed design was discovered during an NRC inspection. In SSER9, the staff concluded that the as-installed sump screen was acceptable. --- CONFIRMATORY ISSUE - provide a detailed survey of insulation material that could be debris post-LOCA In the original 1982 SER, NRC found the design of the containment sump against debris acceptable subject to the acceptability of a detailed survey of insulation materials. In SSER2, the NRC review of the survey confirmed the staff's initial conclusion that the design to provide protection against sump debris was acceptable. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
6 . 3 . 4	0	C	Approved for both units in SER.
6 . 3 . 5	0	O	Closure based on 6.3.1 to 6.3.3.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 4 . 0	18	C	In SSER5, the staff concluded that removal of the main control room air intake chlorine detector was acceptable. In SSER11, they stated that FSAR Amendment 69 on control room isolation did not change previous conclusions. In SSER16, the staff concluded that the control room design satisfied the requirements of GDC 19 and the guidelines of NUREG-0737, Item III.D.3.4. In SSER18, the staff reviewed updated control room air flow rate data and dose analysis, as provided in Amendment 90, and determined that the changes did not affect conclusions reached in the SER or its supplements. See 18.1.0 also.
6 . 5 . 0	0	C	Approved for both units in SER.
6 . 5 . 1	5	C	In SSER5, the staff found the Reactor Building Purge Ventilation System acceptable.
6 . 5 . 2	0	C	Approved for both units in SER.
6 . 5 . 3	0	C	Approved for both units in SER.
6 . 5 . 4	0	C	Approved for both units in SER.
6 . 6 . 0	15	O	OUTSTANDING ISSUE on additional information required on preservice inspection program and identification of plant specific areas where ASME Code Section XI requirements cannot be met and supporting technical justification NRC reviewed the preservice inspection program (PSI) for Unit 1 only in SSER10 and on the basis of a TVA commitment to submit an inservice inspection program within 6 months after receiving an operating license, considered a proposed LC for an ISI no longer required. In SSER15, the staff reviewed Revisions 24 and 25 to the preservice inspection program and concluded that the changes included therein were acceptable. Unit 2 action: Submit Unit 2 PSI program.
7 . 0 . 0	0	C	Approved for both units in SER.
7 . 1 . 0	0	C	Approved for both units in SER.
7 . 1 . 1	16	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- By letter dated August 21, 1995 for both units, TVA provided additional justification for a deviation from Position C.6(a) of RG 1.118 "Periodic Testing of Electrical Power and Protection Systems" Revision 2. In SSER16, the NRC found the deviation acceptable.
7 . 1 . 2	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7 . 1 . 3	15	OT	In the SER, NRC indicated that a review of the setpoint methodology would be performed with a review of the Technical Specifications. In SSER4, NRC reviewed the methodology used to determine setpoints for Watts Bar Units 1 and 2 and determined that it was acceptable. By letter dated July 29, 1994, for both units, TVA submitted a topical report titled "Westinghouse Setpoint Methodology for Protection Systems, Watts Bar Units 1 and 2, Eagle 21 Version" (WCAP-12096, Revision 6). In SSER15, the NRC concluded the setpoint methodology was acceptable based on (1) previous acceptance of Westinghouse setpoint methodology at other plants, (2) the similarity between the Watts Bar and previously approved designs such as Sequoyah, and (3) the Watts Bar setpoint methodology is in compliance with RG 1.105 and ISA S6704. Staff requested discussion of methodology for determining, setting, and evaluating as-found setpoints for drift susceptible instruments. Unit 2 action: Resolve this issue using the BFN TS-453 precedent (see NRC ML061680008).
7 . 2 . 0	0	C	Approved for both units in SER.
7 . 2 . 1	15	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. In SSER15, the NRC reviewed the WBN Unit 1 EMI/RFI report and concluded that the EMI/RFI issue was resolved for WBN Unit 1. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.
7 . 2 . 2	0	C	Approved for both units in SER.
7 . 2 . 3	0	C	Approved for both units in SER.
7 . 2 . 4	0	C	Approved for both units in SER.
7 . 2 . 5	14	CI	CONFIRMATORY ISSUE - address IEB 79-21 to alleviate temperature dependence problem associated with measuring SG water level In SSER2, NRC accepted TVA's commitment to insulate the steam generator water level reference legs to alleviate the temperature dependence problem. By letter dated July 27, 1994, TVA submitted an evaluation for both units and determined that it was not necessary to insulate the SG reference legs at WBN. In SSER14, NRC concurred with TVA's assessment to not insulate the steam generator water level instrument reference leg. Unit 2 Action: Update accident calculation.
7 . 2 . 6	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. "CONCLUSIONS" left open until all actions in subsection are closed.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7.3 .0	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.
7.3 .1	14	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- In SSER14, NRC reviewed TVA's FSAR amendment 81 section 7.3.2.2.6, with respect to a deviation from IEEE Standard 279-1971. Manual initiation of both steamline isolation and switchover from injection to recirculation following a loss-of-primary-coolant accident are performed at the component level only. In SSER14, NRC agreed with TVA's justification.
7.3 .2	2	C	CONFIRMATORY ISSUE is commitment to make a design change to provide protection that prevents debris from entering containment sump level sensors In the original SER, staff identified a concern that debris in the containment sump could block the inlets to the differential pressure transmitters and result in a loss of the permissive signal to the initiation logic for the automatic switchover from the injection to the recirculation mode of the emergency core cooling system. In a September 15, 1983, letter TVA notified NRC that the level sensors had been moved from inside the sump wall to outside the sump wall with the sense line opening protected by a cap with small holes. Staff closed the issue in SSER2.
7.3 .3	0	C	Approved for both units in SER.
7.3 .4	0	C	Approved for both units in SER.
7.3 .5	3	CI	CONFIRMATORY ISSUE - perform confirmatory tests to satisfy IEB 80-06 (to ensure that no device will change position solely due to reset action) and staff review of electrical schematics for modifications that ensure that valves remain in emergency mode after ESF reset In the original SER, staff concluded that the design modifications for Bulletin 80-06 were acceptable subject to review of the electrical schematics that were not available at the time. In SSER3, the staff found the modifications acceptable and closed the confirmatory issue. Unit 2 Action: Perform verification during preoperational testing.
7.3 .6	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. "CONCLUSIONS" left open until all actions in subsection are closed.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7.4 .0	0	C	Approved for both units in SER.
7.4 .1	0	C	Approved for both units in SER.
7.4 .2	7	C	By letter dated September 26, 1985, TVA requested a deviation from 10 CFR Part 50, Appendix R, Section III.L.2.d for use of the SG saturation temperatures to approximate reactor coolant system cold leg temperatures. This was approved for both units by SE dated May 17, 1991. The SE was discussed in SSER7. The staff concluded that this was an acceptable deviation.
7.4 .3	0	C	Approved for both units in SER.
7.5 .0	0	C	Approved for both units in SER.
7.5 .1	0	C	Approved for both units in SER.
7.5 .2	15	CI	OUTSTANDING ISSUE involving RG 1.97 instruments following course of an accident In the original 1982 SER, the staff stated that WBN did not use RG 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plants and Environs Conditions During and Following an Accident," for the design because the design predated the RG. In SSER7, an outstanding issue was opened. TVA provided NRC information on exceptions to RG 1.97. A detailed review was performed for both units (Appendix V of SSER9). The staff concluded that WBN conforms to or has adequately justified deviations from the guidance of RG 1.97, Revision 2. TVA submitted additional deviations for both units in letters dated May 9, 1994, and April 21, 1995. In SSER14 and SSER15, the additional deviations to RG 1.97 were reviewed and accepted by NRC. NUREG-0737, II.F.1.2, ""Accident Monitoring Instrumentation" – Reviewed in SSER9. Unit 2 Actions: Install Noble gas, Iodine / particulate sampling, and Containment High Range Monitors. CI in NRC letter May 28, 2008.
7.5 .3	0	CI	B 79-27, "Loss of Non-class 1E I&C Power System Bus During Operation" – TVA responded to the Bulletin on March 1, 1982. Reviewed in 7.5.3 of the original 1982 SER. Unit 2 Action: Issue appropriate emergency procedures.
7.5 .4	0	CI	"CONCLUSIONS" left CI until all items in subsection are closed.
7.6 .0	0	C	Approved for both units in SER.
7.6 .1	0	C	Approved for both units in SER.
7.6 .2	0	C	Approved for both units in SER.
7.6 .3	0	C	Approved for both units in SER.
7.6 .4	0	C	Approved for both units in SER.
7.6 .5	4	C	CONFIRMATORY ISSUE - install switches on the main control board for the operator to manually arm this system (overpressure protection provided by pressurizer PORVs) In the original 1982 SER, the staff found the design of the overpressure protection during low temperature features acceptable pending review of the drawings and FSAR description. In SSER4, the staff documented completion of the review and closed the confirmatory issue.
7.6 .6	0	C	Approved for both units in SER.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7.6 .7	0	C	Approved for both units in SER.
7.6 .8	0	C	Approved for both units in SER.
7.6 .9	4	C	Approved for both units SER subject to completion of Confirmatory Issue in 7.6.5.
7.7 .0	0	C	Approved for both units in SER.
7.7 .1	0	C	Approved for both units in SER.
7.7 .2	13	C	LICENSE CONDITION – Status monitoring system, Bypassed and Inoperable Status Indication (BISI) In the original 1982 SER, the staff requested TVA address RG 1.47, "Bypassed and Inoperable Status Indications for Nuclear Power Plant Safety Systems." TVA addressed RG 1.47 by letters for both units dated January 29, 1987, and October 22, 1990. In SSER7, the staff documented completion of the review and closed the issue. By letter dated February 18, 1994, for both units, TVA submitted a re-evaluation of BISI that excluded components that would not be rendered inoperable more than once a year in accordance with RG 1.47 position C.3(b). In SSER13, NRC reviewed the revision and concluded that it was acceptable.
7.7 .3	0	C	Approved for both units in SER.
7.7 .4	0	C	Approved for both units in SER.
7.7 .5	0	C	Approved for both units in SER.
7.7 .6	0	C	Approved for both units in SER.
7.7 .7	0	C	Approved for both units in SER.
7.7 .8	14	CT	ATWS Mitigation design was reviewed and approved for both units by a Safety Evaluation Report issued December 28, 1989. This SER is also in Appendix W of SSER9. Outstanding Issue was Technical Specifications requirements. In SSER14, NRC reviewed the revision of FSAR Figure 7.3-3 for the AMSAC automatic initiation signal to start the turbine driven and motor driven auxiliary feedwater pumps and considered the issue resolved. Unit 2 Action: Address in Technical Specifications as appropriate.
7.8 .0	0	C	Approved for both units in SER.
7.8 .1	14	CI	NUREG-0737, II.D.3, "Valve Position Indication" – The design was reviewed in the original 1982 SER and found acceptable pending confirmation of installation of the acoustic monitoring system. In SSER5 (IR 390/84-35), the staff closed the LICENSE CONDITION for Unit 1 only. By letter dated November 7, 1994, for both units, TVA provided a revised response for NUREG-0737 Item II.D.3. TVA revised the design by relocating the accelerometers for valve position indication to downstream of the relief valves. This change was reviewed in SSER14. The revision did not change the function of the position indication hardware and did not alter the previous review. Unit 2 Action: Verify installation of the acoustic monitoring system to PORV to indicate position. CI in NRC May 28, 2008 letter.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7 . 8 . 2	0	CI	NUREG-0737, II.E.1.2, "Auxiliary Feedwater System Initiation and Flow Indication" Unit 2 Action: Complete procedures and qualification testing.
7 . 8 . 3	0	CI	NUREG-0737, II.K.3.9, "Proportional Integral Derivative Controller Modification" – Reviewed in original 1982 SER. Unit 2 Action: Set the derivative time constant to zero.
7 . 8 . 4	4	CT	NUREG-0737, II.K.3.10, "Anticipatory Trip At High Power" In SSER4, NRC concluded that TVA had adequately addressed the requirements of NUREG-0737 Item II.K.3.10 for removal of the anticipatory reactor trip on turbine trip at or below 50% power. Unit 2 Action: Unit 2 Technical Specifications and surveillance procedures will address this issue.
7 . 8 . 5	0	C	NUREG-0737, II.K.3.12, "Confirm Existence of Anticipatory Reactor Trip Upon Turbine Trip" Approved for both units in the SER
7 . 9 . 0		NA	Area not addressed in 1981 Standard Review Plan.
8 . 0 . 0	0	C	Approved for both units in SER.
8 . 1 . 0	0	C	Approved for both units in SER.
8 . 2 . 0	0	C	Approved for both units in SER.
8 . 2 . 1	13	C	Approved for both units in SER. In SSER13, NRC reviewed TVA's analysis of grid stability on loss of both units. The NRC conclusions in the SER remained valid.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 2 . 2	15	C	8.2.2.1 CONFIRMATORY ISSUE - document additional information in FSAR on control power supplies and distribution system for the Watts Bar Hydro Plant Switchyard In the original 1982 SER, NRC concluded that the offsite power system circuits at the Watts Bar Hydro Plant Switchyard met GDC 17 pending documentation in the FSAR. The information was added to the FSAR. In SSER2, NRC closed the issue. In SSER13, the staff reviewed revised information incorporated into FSAR amendment 71 for both units and concluded that it supported the original conclusion in SSER2. --- 8.2.2.2 OUTSTANDING ISSUE involving compliance of design changes to the offsite power system with GDC 17 and 18. In SSER2 and 3, NRC continued the review of the offsite electrical power system. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the design changes to minimize the probability of losing all AC power, compliance with GDC 17 and minimizing the probability of a two unit trip following a one unit trip. These issues were resolved in SSER13. Additional review was done in SSER14, but the conclusions remained valid. --- 8.2.2.3 Compliance with GDC 17 for the Duration of the Offsite System Contingencies By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC reviewed the load shed scheme described in FSAR amendment 71 that reduces loads from common station service transformers A and B including contingency for both units trip and a 161-kV supply contingency. In SSER15, NRC determined that entering the LCO for one offsite circuit inoperable was appropriate. No open items were identified. --- 8.2.2.4 Minimizing the Probability of a Two-Unit Trip Following a One-Unit Trip By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In FSAR amendment 71, TVA described the transfer of power sources on trip of a unit's main generator. In SSER 13, NRC evaluated the design and determined that the concern was resolved.
8 . 2 . 3	0	C	Approved for both units in SER.
8 . 2 . 4	0	C	Approved for both units in SER.
8 . 3 . 0	0	C	Approved for both units in SER.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 3 . 1	20	OT	8.3 Fifth Diesel Generator

In SSER10, NRC reviewed the design of the fifth diesel generator. In SSER18, NRC accepted TVA's commitment to perform modifications and surveillances including preoperational testing before declaring the fifth diesel generator operable as a replacement for one of the four diesel generators. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.

8.3.1.1: CONFIRMATORY ISSUE - incorporate new design that provides dedicated transformer for each preferred offsite circuit in FSAR

In the original 1982 SER, NRC concluded that the offsite power system with a dedicated transformer for each preferred offsite circuit met GDC 17 pending documentation in the FSAR. The information was added to the FSAR. In SSER2, NRC closed the issue. In SSER13, NRC reviewed additional changes though FSAR amendment 75 and concluded that the design was acceptable.

8.3.1 DG Starting and Control Circuit Logic

In SSER10, NRC reviewed the DG starting and control circuit logic. No open items were identified.

8.3.1.2 Low and Degraded Grid Voltage Condition

In the SER, NRC stated they would verify the adequacy of TVA's analysis regarding Branch Technical Position PSB-1 once preoperational testing was completed. In SSER13, the NRC reviewed information on the load shed and diesel start relays. In SSER14 NRC clarified the requirements. In SSER20, NRC reviewed the preoperational test for Unit 1.

Unit 2 Action: Include the setpoint in the Technical Specifications for the load shed relays and similar minimum limits for the diesel start relays.

8.3.1.6: CONFIRMATORY ISSUE - provide diesel generator reliability qualification test report

In SSER2, NRC indicated that it would verify DG qualification testing. TVA provided a copy of the DG qualification test report. In SSER7, the NRC concluded that the DGs had been satisfactorily tested in accordance with IEEE 387-1977.

8.3.1.6: LICENSE CONDITION (12) - Diesel generator reliability qualification testing at normal operating temperature

In the original 1982 SER, NRC required that the capability of the DGs to start at normal temperature be demonstrated. TVA's August 31, 1983, letter confirmed tests had been performed on a DG identical to those at WBN. In SSER2, NRC closed the issue.

8.3.1.7 Possible Interconnection Between Redundant Divisions Through Normal and Alternate Power to the Battery Charger

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the use of alternate feeders to the battery chargers and inverters and concluded a Technical Specification surveillance for monitoring the position of these supply breakers resolved the item.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION

Unit 2 Action: Include the surveillance requirement in the Technical Specifications.

8.3.1.10 No-load Operation of the Diesel Generator

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the information provided and concluded the issue was resolved. In SSER14, NRC added additional clarification but did not change the conclusions.

8.3.1.11 Test and Inspection of the Vital Power System

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed TVA's plan for test and inspection of the vital ac system and concluded the issue was resolved.

8.3.1.12 The Capability and Independence of Offsite and Onsite Sources When Paralleling During Testing

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the Emergency Diesel Generators response to a loss-of-offsite-power (LOOP). TVA submitted additional information for both units by letters dated February 7, 1994 and June 29, 1994. In SSER14, NRC concluded that the issue was resolved.

8.3.1.13 Use of an Idle Start Switch for Diesel Generators

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the information presented on the local idle start switch and concluded the issue was resolved.

8.3.1.14 Master Fuse List Program

In SSER9, NRC provided a safety evaluation of the Master Fuse List Special Program (SP) for Unit 1 (Appendix U). In SSER 13, NRC referenced the evaluation.

Unit 2 Action: Resolve the SP for WBN Unit 2 with the Unit 1 approach.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8.3.2	14	C	8.3.2.2: LICENSE CONDITION – DC monitoring and annunciation system In SSER3, the staff determined that some items were omitted from the design of the DG DC monitoring and annunciation system. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC closed the issue. --- 8.3.2.4: CONFIRMATORY ISSUE - include diesel generator design analysis in FSAR In the original 1982 SER, staff indicated the design analysis for demonstrating compliance of the DGs with regulatory requirements and guidelines was acceptable pending incorporation of the analysis in the FSAR. The analysis was incorporated in the FSAR, and the issue closed in SSER2. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.5 Non-safety Loads Powered from the DC Distribution System and Vital Inverters By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.5.1 Transfer of Loads Between Power Supplies Associated with the Same Load Group but Different Units By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC reviewed the information provided. Additional information was requested for both units by letter dated March 28, 1994. TVA responded for both units by letter dated June 29, 1994. In SSER14, NRC indicated that the issue was resolved. --- 8.3.2.7 The Fifth Vital Battery System By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.8 Reenergizing the Battery Charger from the Onsite Power Sources Versus Automatically Immediately Following a Loss of Offsite Power By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 3 . 3	16	CT	8.3.3.1.1: CONFIRMATORY ISSUE involving submergence of electrical equipment as result of a LOCA In the original 1982 SER and SSER3, staff stated that the design for the automatic deenergizing of loads as a result of a LOCA would be verified as part of the site visit. During the August 1991, visit and in a letter for both units dated September 13, 1991, TVA committed to revise the FSAR. The information was added to the FSAR in amendment 71. In SSER13, NRC closed the issue. --- 8.3.3.1.3 Failure Analysis of Circuits Associated with Cables and Cable Splices Unqualified for Submergence By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER 13, NRC reviewed the submergence calculation and closed the issue. Unit 2 Action: Revise calculation for WBN Unit 2. --- 8.3.3.1.2: CONFIRMATORY ISSUE - verify design for bypass of thermal overload protective device In the original 1982 SER, NRC indicated that the design for bypass of thermal overload protective devices on safety-related motor operated valves would be verified during the electrical drawing review. The staff subsequently reviewed the drawings and closed the issue in SSER2. --- 8.3.3.1.4 Use of Waterproof Splices in Potentially Submersible Sections of Underground Duct Runs By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13 and 14, NRC raised a concern on splice usage in raceways. TVA submitted additional information for both units by letters dated November 18, 1994, and January 5, 1995. In SSER15, NRC found that TVA had adequately justified the acceptability of the installed splices at Watts Bar. --- 8.3.3.1.5 Dow Corning RTV-3140 Used to Repair Damaged Kapton Insulated Conductors In SSER15, NRC reviewed the use of RTV-3140. TVA submitted the technical basis for use in a December 6, 1994, letter for both units. TVA completed additional testing and told the NRC of the limited use of this repair method for both units by letter dated February 10, 1995. In SSER15, NRC found the use of RTV-3140 acceptable for the limited use described. --- 8.3.3.1.6 Cable Damage Near Splices and Terminations In SSER16, NRC reviewed TVA's corrective action plan for Construction Deficiency Report 390/95-02 and found the limited inspections for damaged Class 1E cables to 10 CFR 50.49 installations acceptable. This was a WBN Unit 1 only CDR. --- 8.3.3.2: CONFIRMATORY ISSUE - revise FSAR to reflect requirements of shared safety systems In the original 1982 SER, the staff stated that the description and analysis of shared onsite AC and DC systems was under review but was acceptable pending revision of the FSAR.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION

In SSER3, the confirmatory issue was left open to track additional information to be incorporated in the FSAR. In a letter dated September 13, 1991, TVA provided the additional information. In SSER13, NRC closed the issue. In SSER14, NRC added additional clarification.

8.3.3.2.2 Sharing of AC Distribution Systems and Standby Power Supplies Between Units 1 and 2

In the SER and SSER3, NRC reviewed the design to the guidelines of RG 1.81 and determined it was acceptable pending revision to the FSAR. NRC noted discrepancies in the FSAR. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC closed the issue.

8.3.3.2.3: CONFIRMATORY ISSUE for design of sharing raceway systems between units

In the original SER, NRC indicated that the design for sharing of raceway systems between units would be verified during the electrical drawing review. The staff confirmed that cable routing was in accordance with accepted separation criteria and closed the issue in SSER2.

8.3.3.2.4: LICENSE CONDITION – Possible sharing of DC control power to AC switchgear

In the original 1982 SER, staff required that all possible interconnections between redundant divisions through normal and alternate power sources to various loads be identified in the FSAR. TVA letter dated January 17, 1984, provided the information. NRC closed the issue in SSER3.

8.3.3.3: LICENSE CONDITION – Testing of associated circuits

In the original 1982 SER, staff required that protective devices used to isolate non-Class 1E from Class 1E circuits be of high quality commensurate with their importance to safety and be periodically tested. TVA letter dated January 17, 1984, provided the information. NRC closed the issue in SSER3.

8.3.3.3: LICENSE CONDITION – Testing of non-class 1E cables

In the original 1982 SER, staff required that protective devices used to isolate non-Class 1E from Class 1E circuits be of high quality commensurate with their importance to safety and be periodically tested. TVA letter dated January 17, 1984, provided additional information. NRC closed the issue in SSER3.

8.3.3.3 Physical Independence (Compliance with GDC 17)

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. The information was incorporated into the FSAR by amendment 71. Surveillance requirements for the testing of protective devices used to protect Class 1E circuits from failure of non-Class 1E circuits were incorporated into the Technical Requirements Manual (TRM). This issue was closed based on review of the TRM in SSER 13.

Unit 2 Action: Incorporate testing requirements into the Unit 2 TRM.

*** = See last page for status code definition.**

8.3.3.3 Physical Independence (Compliance with GDC 17)

In SSER13, NRC cited differences between RG 1.75 and the WBN design criteria (WB-DC-30-4). In SSER14, NRC continued the review. NRC requested additional information for both WBN units by letter dated March 28, 1994. TVA responded for both WBN units by letters dated July 29, 1994, January 11, 1995, and June 5, 1995. In SSER16, NRC found separation between open cable trays (including cables in free air) adequate.

8.3.3.5.1 Compliance with Regulatory Guides 1.108 and 1.118

In SSERs 13, 14 and 15, NRC reviewed WBN compliance with RGs 1.108 and 1.118. In SSER13, NRC reviewed WBN's use of temporary jumper wires when portable test equipment is used during testing. The justification was documented in the FSAR. In SSER14 and 15, NRC reviewed Class 1E standby power system testing, testing DG full load rejection capability and non-class 1E circuitry for transmitting signals needed for starting DGs. NRC concluded that the features were appropriately tested.

8.3.3.5.2: CONFIRMATORY ISSUE - incorporate commitment to test only one of four diesel generators at one time

In the original 1982 SER, the NRC found the commitment to test DGs one at a time acceptable pending its incorporation into the FSAR. In SSER2, NRC reviewed the documentation and closed the issue.

8.3.3.5.3 Time Constraints for Stability of EDG During No-Load Startup Testing

In SSER16, NRC reviewed and approved changes to the no load emergency diesel generator testing surveillance requirements.

Unit 2 Action: Incorporate into WBN Unit 2 TS surveillances.

8.3.3.6: CONFIRMATORY ISSUE involving evaluation of penetrations' ability to withstand failure of overcurrent protection device

In the original 1982 SER, staff required a reevaluation of the penetrations' capability to withstand, without seal failure, the total range of available time-current characteristics assuming a single failure of any overcurrent protective device. In SSER3, staff found the results of the evaluation acceptable pending the information being incorporated in the FSAR. The staff reviewed the FSAR and closed the issue for both units in SSER7.

8.3.3.6: LICENSE CONDITION – Testing of reactor coolant pump breakers

In the original 1982 SER, staff required that the redundant fault current protective devices for the reactor coolant pump circuits meet RG 1.63. In SSER2, staff reviewed the design and concluded it met RG 1.63.

8.3.3.6 Compliance with GDC 50

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. The information was incorporated into the FSAR in amendment 70. In SSER13, NRC indicated that the issue was resolved.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 4 . 0		CI	Station Blackout (SBO) - SE for both units – March 18, 1993; SSE for both units – September 9, 1993. Unit 2 Action: Implement SBO requirements.
8 . 5 . 0		NA	Area not addressed in 1981 Standard Review Plan.
8 . 5 . 1		NA	Area not addressed in 1981 Standard Review Plan.
9 . 0 . 0	10	C	In SSER10, the staff completed its review of the additional DG building and that review is documented in Sections 9.2.1, 9.4.5, 9.5, 9.5.1, 9.5.4, 9.5.6, 9.5.7 and 9.5.8 of SSER10.
9 . 1 . 0	5	C	In response to TVA letters requesting relief from the requirement of 10 CFR 70.24 to have a criticality monitor installed in the fuel storage area until irradiated fuel is placed in the area, the staff granted an exemption from the requirement in SSER5.
9 . 1 . 1	0	C	Approved for both units in SER.
9 . 1 . 2	16	C	In SSER5, the staff acknowledged notification by TVA of a contract with DOE for DOE to accept spent fuel from WB and stated that they had no more concerns about this issue. In SSER15, the staff reviewed TVA's proposed resolution of the Boraflex degradation issue and found it acceptable. In SSER16, the staff reviewed changes in design basis with respect to placement of fuel assembly, and structural aspects of rack fabrication deficiencies, considering that TVA planned to replace the racks by the first scheduled refueling outage. The staff noted that the replacement racks have approximately the same capacity as the original WB racks. The staff concluded that the proposed changes were acceptable provided that no single rack load exceeded 80% of its original capacity.
9 . 1 . 3	15	C	In SSER11, the staff reviewed TVA's revised commitment regarding testing of spent fuel pool cooling pumps and found it acceptable. As a result of a submittal filed as a petition pursuant to 10 CFR 2.206 regarding spent fuel storage safety issues, the staff reevaluated the spent fuel cooling capability at WB considering the identified issues and concluded that the spent fuel cooling system satisfied the requirements of GDC 44 with regard to transferring heat from the spent fuel to an ultimate heat sink under normal operating and accident conditions in SSER15.
9 . 1 . 4	13	OV	LICENSE CONDITION – Control of heavy loads (NUREG-0612) The staff noted in SSER3 that they were reviewing TVA's submittals regarding NUREG-0612 and concluded in SSER13 that the license condition was no longer necessary based on their review of TVA's response to NUREG-0612 guidelines for Phase I in TVA letter dated July 28, 1993. Unit 2 Action: Implement NEI guidance on heavy loads.
9 . 1 . 5		NA	Addressed in 9.1.4.
9 . 2 . 0	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9.2 .1	18	O	In SSER9, the staff noted that Amendment 65 indicated that ERCW provided cooling to the instrument room chillers, instead of room coolers and stated that conclusions in the SER and supplements were still valid. In SSER10, the staff reviewed discrepancies between FSAR figures pertaining to the raw cooling water system and its valving and TVA's clarification of these discrepancies, and considered them resolved. In SSER18, the staff concluded that ERCW does not conform to GDC 5 for two-unit operation. Unit 2 Action: Appropriate measures will be taken to ensure that the ERCW system is fully capable of meeting design requirements for two unit operation.
9.2 .2	5	CI	CONFIRMATORY ISSUE - relocate component cooling thermal barrier booster pumps above probable maximum flood (PMF) level before receipt of an OL TVA committed to relocate the pumps above PMF level and the staff found this acceptable. Implementation for this issue was resolved for Unit 1 in SSER5 when the staff verified in IR 390/84-20 that the pumps had been relocated. Additionally, IR 390/83-06 and 391/83-05 verified that the 4 booster pumps had been relocated and the construction deficiency reports identifying this issue for both units were closed. Unit 2 Action: Verify relocation of pumps for Unit 2.
9.2 .3	0	C	Approved for both units in SER.
9.2 .4	9	C	In SSER9, the staff noted that potable water requirements were incorrectly stated in the SER, but this change did not affect the conclusions reached in the SER.
9.2 .5	0	C	Approved for both units in SER.
9.2 .6	12	C	In SSER12, the staff noted that FSAR Amendment 72 revised the reserved amount of condensate for each units auxiliary feedwater system from 2000,000 gallons to 210,000 gallons and that this did not change the conclusions reached in the SER or supplements.
9.3 .0	0	C	Approved for both units in SER.
9.3 .1	0	C	Approved for both units in SER.
9.3 .2	16	CT	LICENSE CONDITION – Post-Accident Sampling System In SSER3, the staff identified the criteria from Item II.B.3 in NUREG-0737 that were unresolved in the SER and reviewed TVA responses for these items. The staff stated that the post-accident sampling system met all of the criteria and was acceptable. They also stated that the proposed procedure for estimating the degree of reactor core damage was acceptable on an interim basis and that TVA would be required to provide a final procedure for estimating the degree of core damage before start-up following the first refueling outage. In SSER5, the staff stated that due to the 5 year delay in WB licensing, TVA should commit to submitting the procedure at an earlier date. TVA submitted a final procedure for estimating degree of core damage by letter dated June 10, 1994, and the license condition was deleted in SSER14. In SSER16, the staff reviewed TVA's revised emergency plan implementing procedure governing the use of the methodology provided in the June 10, 1994, submittal, and other plant data, for addressing degree of reactor core damage and found the methodology and implementing procedure acceptable. Unit 2 Action: Eliminate requirement for Post-Accident Sampling System in Technical Specifications (Identified as CT in NRC letter dated May 28, 2008).
9.3 .3	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9.3 .4	0	C	Approved for both units in SER.
9.4 .0	0	C	Approved for both units in SER.
9.4 .1	9	C	In SSER9, the staff clarified control room isolation after activation of SI signal from either unit, or upon detection of high radiation or smoke concentration in outside air supply stream and stated that conclusions reached in SER and supplements were still valid.
9.4 .2	0	C	Approved for both units in SER.
9.4 .3	0	C	Approved for both units in SER.
9.4 .4	0	C	Approved for both units in SER.
9.4 .5	19	C	In SSER9, the staff reviewed the design of the additional DG building ventilation system (FSAR Amendment 66 submittal dated May 20, 1991, for both units) and determined that conclusion reached in SER was still valid and design was acceptable. In SSER10, the staff had concerns regarding periodic testing of the ventilation system for the additional DG building; muffler room exhaust fan failure or exhaust blockage; missile protection for the muffler fan exhaust structure; and potential for blockage and turbine missile damage of air intake structures. These were all resolved in SSER10, with the exception of the potential for external blockage of the air intake structure by missile impact. In SSER11 the staff found TVA's response and procedural change to address potential blockage of the air intake structure by missile impact acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service. In SSER14, the staff clarified statements made in the SER by stating that none of the ventilation systems for the ERCW pumping station was safety related, but the failure of both mechanical equipment room ventilation fans would not prevent operation of any safety related equipment. Thus, the conclusions reached in the SER were still valid, and the systems were still acceptable. In SSER16, the staff reviewed design changes to the DG building ventilation system, since the original design was reviewed, and concluded that the judgments made in the SER and supplements did not change and the system was still acceptable. In SSER19, the staff clarified their statements about the diesel engine room exhaust fans, stating that since the fans automatically start when the DG starts, DG testing results in operation of the diesel engine room exhaust fans.
9.5 .0	10	C	In SSER10, the staff reviewed 55 questions previously asked concerning the 4 original DGs for applicability to the additional DG and additional responses from TVA and had no concerns.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 5 . 1	19	C	9.5.1.2: OUTSTANDING ISSUE for Fire Protection Program 9.5.1.3: CONFIRMATORY ISSUE – Electrical penetrations documentation 9.5.1.3: LICENSE CONDITION – Fire protection program In SSER10, the staff noted that the fire hazard analysis for the additional DG building would be included in the WB Fire Protection report. The staff reviewed the building design for compliance with BTP 9.5-1, Appendix A and found it in conformance with the BTP. They also asked TVA to verify that the fire fighting systems installed in the DG building meet GDC 3 and stated that TVA's response satisfied their concerns. In SSER18, the staff concluded that the Fire Protection program for Watts Bar conformed to the requirements of 10 CFR 50.48 and was acceptable except for the fire barrier seal program and emergency lighting inside the Reactor Building. Additionally, the staff considered the confirmatory issue involving electrical penetration documentation resolved in SSER18 on the basis of the safety evaluation of the revised Fire Protection program included in Appendix FF of SSER18. In Appendix FF of SSER19, a safety evaluation of the Fire Protection program contains a detailed evaluation of fire barrier penetration seals. The staff concluded that TVA's penetration seal program adequately demonstrates the fire resistive rating of the penetrations, and that they conform to the guidelines of Positions D.1.j and D.3.d of Appendix A to BTP 9.5.1 and were acceptable. The safety evaluation also includes TVA's revised position on emergency lighting, which was found to be acceptable.
9 . 5 . 2	5	CI	LICENSE CONDITION – Performance testing of communications system The staff resolved this license condition in SSER5 based on TVA's letter of March 18, 1985 for both units, which described its testing of communications systems. Unit 2 Action: Perform testing of communication systems on Unit 2.
9 . 5 . 3	0	C	Approved for both units in SER.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9.5 .4	12	C	9.5.4.1: CONFIRMATORY ISSUE - include required language in operating instruction to ensure no-load and low-load operation is minimized and revise operating procedures to address increased diesel generator load after it has run for an extended period of time at low or no load In SSER5, the staff verified that plant operating procedures had been revised to incorporate requirements that ensure that operational no-load and low-load conditions will not harm the diesel generators. --- 9.5.4.1: LICENSE CONDITION – Diesel Generator reliability The staff verified that the modifications necessary to comply with NUREG/CR-0660 had been completed and, as stated above, requirements had been incorporated into operating procedures. Thus, this license condition was resolved in SSER5. --- 9.5.4.1: OUTSTANDING ISSUE for staff to complete review to determine if diesel generator auxiliary support systems can perform their design safety functions under all conditions, after receipt of all requested information. In SSER5, the staff resolved the issue of the completeness of its review of the emergency diesel engine lubrication oil system. --- 9.5.4.1: OUTSTANDING ISSUE to design skid-mounted piping and components from the day tank to the diesel engine as seismic Category I and to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, as provided in TVA letters dated February 15, 1985, March 18, 1985, and August 30, 1985, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. They stated that this resolution applied to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems (9.5.4.2, 9.5.5, 9.5.6, 9.5.7 and 9.5.8). --- 9.5.4.2: CONFIRMATORY ISSUE - provide missile protection for fuel oil storage tank vent lines The staff found TVA's commitment to provide missile protection for the fuel oil storage tank vent lines acceptable and verified that the protection had been installed and considered this issue resolved in SSER5. --- In SSER9, the staff stated that the conclusions reached in the SER, SSER3 and SSER5 regarding the EDG auxiliary supports systems applied to the additional EDG. This conclusion applied to sections 9.5.5, 9.5.6, 9.5.7 and 9.5.8, as well. In SSER10, the staff questioned tornado missile protection and seismic requirements for the additional DG fuel oil storage tank fill lines and found TVA's response acceptable. The staff questioned the difference between the design of the fuel oil transfer pump for the additional DG and the design of the DG building storage pumps, and found TVA's explanation and proposed clarification to the FSAR acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service. In SSER11, the staff noted the revised capacity of the 7-day fuel oil storage tank identified in FSAR Amendment 69 and stated that it still exceeded the amount needed for a 7-day supply and, therefore, did not affect the staff's conclusions reached in the SER or supplements.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
			In SSER12, the staff determined that the fire watch required when routing a hose from a fuel oil delivery vehicle to the DG tank manway openings in the DG building was no longer required based on TVA actions in response to other fire protection requirements.
9.5 .5	11	C	OUTSTANDING ISSUE to design engine cooling water system piping and components for all engines up to the engine interface, including auxiliary skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER5, the staff also resolved concerns regarding ambient DG room temperature and its impact on pre-heating DG units, the time period the DG is capable of operating fully loaded without secondary cooling, and the possibility of the cooling water system becoming air bound due to the expansion tank location. In SSER11, the staff noted that FSAR Amendment 70 stated that coolant temperature would be maintained between 125 and 155 degrees F, not the 115 and 125 stated in the SER. They stated that this clarification did not alter the staff's conclusions previously reached in the SER or its supplements.
9.5 .6	10	C	OUTSTANDING ISSUE to design engine air-starting system piping components for all engines up to the engine interface, including auxiliary skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff questioned protection of the additional DG electrical starting system components from water spray, and whether diesel engine control functions supplied by the air starting system could interfere with the engines' ability to perform its safety function once it has started. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 5 . 7	10	C	OUTSTANDING ISSUE to perform additional modification, or provide justification for acceptability of proposed modification, to ensure lubrication of all wearing parts of the diesel engine either on an interim or continuous basis and to provide a more detailed description of the lubricating oil system and a description of the diesel engine crankcase explosion protection features In response to a staff concern regarding dry diesel engine starting, TVA proposed using the manufacturers' modification and provided justification for its ability to ensure lubrication of all parts of the diesel engine. The staff found this acceptable in SSER3. TVA submittal of March 18, 1985, responded to a staff request to describe the features that protect the diesel engine crankcase from exploding. In SSER5, on the basis of this submittal, the staff concluded that the emergency diesel engine lubrication oil system can perform its safety function and is acceptable. This issue was resolved. --- OUTSTANDING ISSUE to design standby diesel engine lube oil system piping and components up to the engine interface, including skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff questioned the ability to replenish the additional DG lube oil system without interrupting operation of the DG and found TVA's provision to replenish lube oil acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.
9 . 5 . 8	10	C	OUTSTANDING ISSUE to design standby diesel engine combustion air intake and exhaust system piping and components up to the engine interface to ASME Section III, Class 3 and recommendations of RG 1.26 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff expressed a concern regarding products of combustion from a fire in the air intake/muffler room, or from the DG exhaust gases, impacting the additional DG or the other DGs. TVA's response addressed the concern. The staff also questioned inspection, surveillance and testing of the DG exhaust system and found the system design adequate to address their concern. In addition, the staff questioned pressure losses through the DG air intake and exhaust systems and determined that their designs were acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.
10 . 0 . 0	0	C	Approved for both units in SER.
10 . 1 . 0	0	C	Approved for both units in SER.
10 . 2 . 0	5	C	In SSER5, the staff agreed that the interval between periodic turbine valve testing could be increased for WB from weekly to monthly.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
10 . 2 . 1	12	C	In SSER12, the staff reviewed the revised description of the 3 independent overspeed turbine trip systems, consistent with FSAR Amendment 77, and stated that this review did not alter the conclusions reached in the SER and the system remained acceptable.
10 . 2 . 2	0	C	Approved for both units in SER.
10 . 3 . 0	0	C	Approved for both units in SER.
10 . 3 . 1	19	C	In SSER12, the staff described changes to the MSIV closing signals as a result of changes to the Eagle-21 process protection system. They stated that the conclusions reached in the SER were still valid and the main steam system remained acceptable. In SSER19, the staff evaluated a revision in FSAR Amendment 91 to the closure time of the MSIVs from 5 seconds after receiving a closure signal to 6 seconds and concluded it was acceptable.
10 . 3 . 2	0	C	Approved for both units in SER.
10 . 3 . 3	0	C	Approved for both units in SER.
10 . 3 . 4	5	OT	LICENSE CONDITION -- Secondary water chemistry monitoring and control program The staff determined that the secondary water chemistry monitoring and control program was being included in the administrative section of the Technical Specifications and resolved this for Unit 1 in SSER5. Unit 2 Action: Take same action for Unit 2.
10 . 4 . 0	0	C	Approved for both units in SER.
10 . 4 . 1	9	C	In SSER9, the staff clarified the description of the main condenser and stated that this clarification did not affect the conclusion reached in the SER.
10 . 4 . 2	0	C	Approved for both units in SER.
10 . 4 . 3	0	C	Approved for both units in SER.
10 . 4 . 4	5	C	In SSER5, the staff concluded that periodic stroking of the turbine bypass system valves may be performed according to plant operating procedures and no Technical Specification was necessary to ensure this testing.
10 . 4 . 5	0	C	Approved for both units in SER.
10 . 4 . 6	0	C	Approved for both units in SER.
10 . 4 . 7	14	C	In SSER14, the staff evaluated changes that TVA made in Amendment 82 to the FSAR adding a new feedwater isolation signal and clarifying the isolation signal generated by a reactor trip, and stated that the revisions did not affect the conclusions reached in the SER. The staff also corrected an unrelated error they made in the SER regarding the time for the main feedwater regulation valves to close after receipt of a feedwater isolation signal and stated that the conclusions reached in the SER remained valid.
10 . 4 . 8	0	C	Approved for both units in SER.
10 . 4 . 9	14	C	In SSER14, the staff discussed reductions in auxiliary feedwater pump design-basis flow rates and new minimum flow requirements. They reviewed TVA's reanalysis of design-basis events and concluded that the revised flow rates were acceptable and the conclusions reached in the SER remained valid.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 0 . 0	0	C	Approved for both units in SER.
11 . 1 . 0	16	OV	This item remains open pending closure of 11.4.0 and 11.5.0
11 . 2 . 0	16	C	In SSER 4, the staff evaluated the revised description contained in FSAR Revision 49 and 54 and determined that the conclusions reached in the original SER were not affected by the revisions. In SSER 16, the staff superseded its previous review of the liquid waste management system. The staff concluded that TVA had submitted sufficient design information for both Units 1 and 2 liquid waste management system in accordance with 10 CFR 50.34a requirements and that the LWMS for Watts Bar Units 1 and 2 met the acceptance criteria of SRP Section 11.2 and was, therefore, acceptable.
11 . 3 . 0	16	C	In the SER, the staff identified that the hydrogen and oxygen monitoring system did not meet the acceptance criteria because redundant monitors had not been provided and because the system was not designed to automatically initiate action to mitigate the potential for explosion in the event of high oxygen content. This issue was addressed by Technical Specifications discussed in the original SER and in SSER 8 but was later resolved in SSER 16. Based upon NRC review of TVA's February 17, 1995, letter (submitted on both dockets), the staff accepted the WBN's system approach of preclusive of gas buildup, as allowed by SRP Section 11.3 guidelines, if TVA submitted an administrative program to satisfy administrative controls for TS 5.7.2.15, "Explosive Gas and Storage Tank Radioactivity Monitoring Program." As stated in TVA's letter dated July 21, 1995, the program would provide for monitoring and control of potential explosive mixtures, limit the concentration of oxygen, and surveillance to ensure that the limits are not exceeded. As a result of an SSER 16 review, the staff concluded that the GWMS for Watts Bar Units 1 and 2 met the acceptance criteria of SRP Section 11.3 and was acceptable.
11 . 4 . 0	16	OV	On the basis of its review in SSER 16, the staff found the process control program for Watts Bar acceptable and concluded that the solid waste management system for Watts Bar Unit 1 conformed to the acceptance criteria of SRP Section 11.4 and was, therefore, acceptable. Unit 2 Action: Provide system description and information on QA provisions for Unit 2 Solid Waste Management System and information on the Process Control Program.
11 . 5 . 0	20	OV	In SSER 16, the staff updated its review to Amendment 89, and TVA's submittal dated February 17, 1995. The staff concluded that the process and effluent radiological monitoring and sampling system for Watts Bar Unit 1 complied with 10 CFR 20.1302 and GDCs 60, 63, and 64. The staff also concluded that the system design conformed to the guidelines of NUREG-0737, RGs 1.21 and 4.15, and applicable guidelines of RG 1.97 (Rev. 2). Thus, the system met the acceptance criteria of SRP Section 11.5 and was, therefore, acceptable. In SSER 20, the staff agreed that TVA did not commit to RG-4.15, Revision 1 as reflected in TVA's July 21, 1995 letter. In that letter, TVA had stated that the radiation monitoring system generally agrees with and satisfies the intent of the RG 4.15 except for specific calibration techniques and frequencies. The staff then reiterated its earlier finding stated in SSER 16, Section 11.5.1, that the radiation monitoring system for Watts Bar Unit 1 meets the intent and purpose of RG 4.15, with respect to quality assurance provisions for the system. The staff modified one sentence from SSER 16 and then concluded by stating that the other conclusions given in SSER16 continued to be valid. Unit 2 Action: Provide system description and information on QA provisions for the Unit 2 Radiation Monitoring System

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 6 . 0	16	C	In SSER 8, the staff reviewed the preoperational REMP program provided by letter dated June 14, 1991 (submitted for both dockets) The staff concluded in SSER Section 1.6.1, "Offsite Radiological Monitoring Program," that the Watts Bar preoperational REMP as proposed was adequate to provide baseline data which will assist in verifying radioactivity concentrations and related public exposures during plant operation, and was therefore acceptable. The staff provided a safety evaluation for both units via a September 10, 1991 letter. In SSER 16, the staff superseded previous evaluations provided in this section by Sections 11.1 through 11.5 of this supplement, except for the material in Section 11.6.1 of SSER 8, which was unaffected by supplement 16.
11 . 7 . 0	0	OT	This item will remain open pending resolution of Item 11.7.2.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 7 . 1	6	CI	LICENSE CONDITION (6a) - Accident monitoring instrumentation II.F.1 – Noble Gas monitor In SSER 5, TVA submitted letter dated April 26, 1985, on the Unit 1 docket which stated that the Unit 2 shield building vent monitor could not be installed by the time Unit 1 fuel load was scheduled in 1985 because of procurement problems. Since the 1985 fuel load was delayed, TVA subsequently committed in letter dated October 11, 1990, that this monitor and its sampler would be operational before fuel was loaded in Unit 1. This commitment eliminated the staff's concern and resolved the proposed License Condition 6a. Also, in SSER 5, TVA letter dated November 8, 1983 (submitted on both Unit 1 and Unit 2 dockets) requested an exception to the requirement to monitor pressurized-water reactor steam safety valve discharge and atmospheric steam dump valve discharge to be monitored by high-range noble gas effluent monitors by stating that adequate instrumentation was provided to detect a steam generator tube rupture. The staff disagreed with this approach which resulted in TVA subsequently committing in a letter dated October 11, 1990 (submitted on both dockets) that the required high range noble gas effluent monitor would be operational before fuel load. This commitment resolved the staff's concern and eliminated the need for License Condition 6a. --- LICENSE CONDITION (6b) - Accident monitoring instrumentation II.F.1 – Iodine particulate sampling See 7.5.2. In addition, in SSER 5, by letter dated April 26, 1985, submitted on the Unit 1 docket, TVA committed to have the capability for continuous collection in place (i.e., procedures and any minor system modifications necessary) before exceeding 5-percent power. The staff evaluated this commitment and found it acceptable. Since 1985 licensing of Watts Bar was delayed, TVA subsequently committed via letter dated January 3, 1991, as discussed in SSER 6 that the procedural revision and upgrade of the radiation monitors would be done by Unit 1 fuel load. Thus License Condition 6b was resolved in SSER 6. In SSER 6, TVA via letter dated January 3, 1991, committed to have the procedural revision and upgrade of the radiation monitors by fuel load. This commitment ensured the plant would have the capability for continuous collection of post accident gaseous effluents by fuel load. --- In SSER 5, the staff noted that the WBN design did not include a high-range noble gas effluent monitor as described in NUREG-0737, Item II.F.1, Attachment 1, for the auxiliary building vent because the release is diverted to the shield building vent for design-basis accidents. A low-range to high-range radiation monitor is provided in the shield building ventilation stack. By letter dated November 22, 1983, TVA requested an exception to NUREG-0737, Item II.F.1, concerning the installation of high-range noble gas monitors on the auxiliary building vent at Watts Bar. TVA provided the staff additional information at a meeting on December 20, 1983, and subsequently in a submittal dated January 24, 1984. The staff concluded that the auxiliary building vent was not considered to be a potential accident release pathway and, therefore, the Watts Bar Nuclear Plant design, as described above, does not need to be changed to provide for the addition of a high-range noble gas effluent monitor, as described in NUREG-0737, Item II.F.1, Attachment 1, for the auxiliary building vent. The above items were identified as CI by NRC in May 28, 2008 letter.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 7 . 2	16	OT	NUREG-0737, III.D.1.1, "Primary Coolant Outside Containment" - Resolved for Unit 1 only in SSER10; reviewed in Appendix EE of SSER16. Unit 2 Actions: Include the waste gas disposal system in the leakage reduction program and incorporate in Unit 2 Technical Specifications. --- In SSER 5, TVA by letter dated October 4, 1984, submitted a justification for excluding the waste gas system from the leak reduction program under NUREG-0737, Item III.D.1.1. The staff has evaluated the TVA's submittal and found that sufficient information had not been submitted to provide assurance that significant quantities of radioactive materials would not enter the waste gas system in the event of an accident. On this basis, the staff concluded that the leakage reduction program was acceptable if the following systems were to be included leakage reduction program: (1) residual heat removal, (2) containment spray, (3) safety injection, (4) chemical and volume control, (5) sampling, and (6) waste gas. The staff proposed License Condition 24 and would be resolved if TVA accepted the change as stated above. In SSER 6, the staff reviewed TVA's letter dated March 27, 1986, and agreed that TVA had justified excluding the WGDS from the program. In SSER 10, the staff resolved Condition 24, when upon review of TVA letter dated August 27, 1992, they noted that WGDS specification was included in the draft TS Section 5.7.2.
12 . 0 . 0	14	C	Approved for both units in SER.
12 . 1 . 0	14	C	In SSER 10, the staff updated its evaluation based upon review of FSAR Amendments 65 through 71 and TVA letter dated January 3, 1991 submitted on U1 docket only. The staff acknowledged that TVA would soon revise FSAR again due to reflect recent changes to 10 CFR Part 20. In SSER 14, the staff reviewed the revised FSAR to reflect the 10 CFR Part 20 changes. Details of the staff's review are delineated in the sections that follow .
12 . 2 . 0	14	C	In SSER 14, the staff reviewed the revised FSAR discussion of ALARA design and operational considerations in this section that were made to clarify that the total effective dose equivalent for each individual would be maintained ALARA. As revised, FSAR Section 12.1 was consistent with the requirements in 10 CFR 20.1101 and 20.1702 and was, therefore, acceptable to the staff.
12 . 3 . 0	14	C	In SSER 14, the staff reviewed the revised FSAR descriptions of the radioactive sources expected to result from normal plant operations, anticipated operational occurrences, and accident conditions. The staff concluded that the descriptions of plant radioactive sources, as revised, conformed to the acceptance criteria in SRP Section 12.2 and were, therefore, acceptable to the staff.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
12 . 4 . 0	18	C	In SSER 10, the staff reviewed revised operational test frequency of area radiation monitors from monthly to quarterly and found that TVA's program met the provisions of 10 CFR 20.1601(c) and the acceptance criteria in SRP Section 12.3 and was, therefore, acceptable. In SSER 14, the staff reviewed FSAR Amendment 84 in light of the revised requirements of 10 CFR Part 20. The staff found these sections, as amended, complied with the acceptance criteria in the SRP and was acceptable to the staff. In addition, the staff reviewed revised FSAR Section which specified the radiation dose rate design criteria for the placement and configuration of plant system valves This section as amended was consistent with the staff's conclusion that Watts Bar can be operated within the dose limits and that radiation doses can be maintained ALARA. Therefore, these changes were acceptable to the staff. In SSER 18, the staff reviewed FSAR Amendments 89 and 90 in which TVA had revised the discussions of the installed area radiation monitoring and the fixed airborne radiation monitoring systems. In addition, Amendment 90 revised the estimated maximum radiation dose rates depicted on the radiation zone maps for several areas in the plant. The staff also reviewed FSAR text changes that clarified the distinctions between a monitor calibration, a monitor channel operational test, and a check source functional test and deleted discussions of fixed airborne radiation monitors in the Unit 2 hot sample room and the Unit 1 control room and were replaced with portable continuous air monitors (CAMs). The staff found this acceptable since it did not change the staff's conclusion documented in SSER 14.
12 . 5 . 0	14	C	In SSER 14, the staff reviewed FSAR Amendment 88 which revised the discussion of the estimate of personnel internal exposures to address the new 10 CFR Part 20 requirements. The staff concluded that this section as amended provided reasonable assurance that the requirements of 10 CFR 20.1502 and 20.1703 would be met. In addition, the staff reviewed FSAR Amendment 84 which updated the predicted maximum annual doses resulting from plan operation and determined that this section as amended provides reasonable assurance that the radiation doses resulting from plant operations would not exceed the limits in 10 CFR 20.1301.
12 . 6 . 0	14	C	OUTSTANDING ISSUE involving Health Physics Program The staff reviewed TVA's RADCON program (formerly the HP program) and found that the WBN organizational structure can provide adequate support for the RADCON program and that organizational changes described in the FSAR amendments met the staff's acceptance criteria. They considered this issue resolved in SSER10. In SSER14, the staff reviewed the revised FSAR sections (through Amendment 88), and found them acceptable.
12 . 7 . 0	0	C	Approved for both units in SER.
12 . 7 . 1	16	CI	NUREG-0737, II.B.2, "Plant Shielding" - NRC reviewed in Appendix EE of SSER16. In SSER 14, the staff reviewed FSAR Amendment 88 which revised the discussion of shielding for accident conditions. The staff stated that this change did not affect the staff's previous conclusion that Watts Bar conformed to the positions in NUREG-0737 Item II.B.2, and was therefore, acceptable to the staff. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Complete Design Review of EQ of equipment for spaces/systems which may be used in post accident operations. CI in NRC May 28, 2008 letter.
12 . 7 . 2	5	CI	NUREG-0737, II.F.1.2.C., "Accident Monitoring Instrumentation" - In SSER5, the staff resolved this license condition for Unit 1 (IR 390/84-09 & IR 390/84-28) due to verification that TVA's commitments regarding the high range in-containment monitor were satisfactory and that it was installed. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Install high range in-containment monitor for Unit 2. CI in NRC May 28, 2008 letter.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
12 . 7 . 3	16	CI	NUREG-0737, III.D.3.3, "In-plant Monitoring of I2 radiation monitoring" - NRC reviewed in Appendix EE of SSER16. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Complete modifications for Unit 2. CI in NRC May 28, 2008 letter.
13 . 0 . 0	0	C	Approved for both units in SER.
13 . 1 . 0	16	C	In SSER16, NRC reviewed the organizational information presented in TVA Topical Report TVA-NPOD89. NRC approval of the topical report and its revisions superseded the staff review in the SER.
13 . 1 . 1	0	C	Approved for both units in SER.
13 . 1 . 2	0	C	Approved for both units in SER.
13 . 1 . 3	8	O	LICENSE CONDITION – Use of experienced personnel during startup In the original 1982 SER, NRC provided a LICENSE CONDITION to ensure TVA augmented the shift staff with individuals that had prior experience with large pressurized water reactor operations. In SSER 8, NRC reviewed TVA's commitment in the FSAR and the Nuclear Quality Assurance Plan to comply with RG 1.8, "Personnel Selection and Training,". NRC staff considered that this provided adequate assurance, and eliminated the LICENSE CONDITION. Unit 2 Action: Submit staffing and NQAP for two unit operation.
13 . 2 . 0	0	C	Approved for both units in SER.
13 . 2 . 1	10	C	In SSER9, NRC reviewed TVA's certification for licensed operator training programs and FSAR Chapter 13 revision to reflect the training program . NRC determined that these were acceptable. In SSER10, NRC reviewed changes to the initial test program for TMI Item I.G.1, "Training During Low Power Testing." NRC found the training requirement satisfied.
13 . 2 . 2	0	C	Approved for both units in SER.
13 . 3 . 0	13	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 3 . 1	20	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. In SSER20, NRC completed the review including the findings of the Federal Emergency Management Agency. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 3 . 2	20	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. In SSER13, the staff concluded that the WBN Radiological Emergency Plan (REP) provided an adequate planning basis for an acceptable state of onsite emergency preparedness. In SSER 20, NRC completed the review and found that the REP complied with NRC requirements and was acceptable for the full-power license of WBN Unit 1. Unit 2 Action: Submit WBN REP for two unit operation.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
13 . 3 . 3	20	O	LICENSE CONDITION – Emergency Preparedness (NUREG-0737, III.A.1, III.A.2, III.A.2) The NRC review of Emergency Preparedness in SSER13 superseded the review in the original 1982 SER. In SSER13, the staff concluded that the WBN Radiological Emergency Plan (REP) provided an adequate planning basis for an acceptable state of onsite emergency preparedness, and the LICENSE CONDITION was deleted. In SSER 20, NRC completed the review and found that the REP complied with NRC requirements and was acceptable for the full-power license of WBN Unit 1. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 4 . 0	8	OV	LICENSE CONDITION - Independent Safety Engineering Group (ISEG) (NUREG-0737, I.B.1.2) In SSER 8, NRC indicated that the ISEG would be established as part of the Technical Specifications. Resolved for Unit 1 only in SSER8. Unit 2 action: Implement the alternate ISEG that was approved for the rest of the TVA units including WBN Unit 1 by NRC on August 26, 1999. The function will be performed by the site engineering organizations.
13 . 5 . 0	0	C	Approved for both units in SER.
13 . 5 . 1	0	C	Approved for both units in SER.
13 . 5 . 2	10	CI	OUTSTANDING ISSUE involving operating, maintenance and emergency procedures In the original 1982 SER, this issue was used to track the staff's review of the emergency operating procedures generation package. In SSER9, the staff concluded that the outstanding issue was no longer needed as the staff no longer performed such reviews. The emergency operating procedure development program review is performed under IP 42000, "Emergency Operating Procedures." This inspection will be performed before issuance of an operating license. In SSER10, NRC reviewed TVA's plan for vendor review of the power ascension test procedures and the Emergency Operating Instructions (EOIs). Based on the Watts Bar plant specific simulator, NRC determined that a License Condition to ensure consistency with the Sequoyah EOIs was no longer necessary. Unit 2 Action: Issue operating, maintenance and emergency procedures.
13 . 5 . 3	16	CT	LICENSE CONDITION – Report on outage of emergency core cooling system (NUREG-0737, II.K.3.17) In the original 1982 SER, the NRC accepted TVA's commitment to develop and implement a plan to collect emergency core cooling system outage information. In SSER3, the staff accepted a revised commitment from an October 28, 1983, letter to participate in the nuclear power reliability data system and comply with the requirements of 10 CFR 50.73. --- Reporting of Safety Valve and Relief Valve Failures and Challenges (II.K.3.3) In SSER 16, NRC reviewed TVA revised commitment to report failures and challenges to PORVs and safety valves in accordance with the Technical Specifications. Unit 2 Action: Include, as necessary, in the Technical Specifications. CT in NRC May 28, 2008 letter.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
13 . 6 . 0	20	C	OUTSTANDING ISSUE to file appropriate revision to the Physical Security Plan In the original 1982 SER, the staff identified certain outstanding issues with TVA's Physical Security Plan. In SSER 1 NRC evaluated revisions to the plan submitted July 29, 1982. In SSER15, NRC provided a safety evaluation that concluded that WBN conforms to the requirements of 10 CFR 50.73. --- LICENSE CONDITION – Physical security of fuel in containment In SSER1, part of the Physical Security Plan (PSP) was not in accordance with the regulation. TVA submitted a new PSP on June 17, 1992. In SSER10, the staff concluded that the provisions for protection of the containment during major refueling and maintenance met the intent of the regulation. --- LICENSE CONDITION - Land Vehicle Bomb Control Program In SSER20, NRC added a license condition for WBN Unit 1 to fully implement the Surface Vehicle Bomb Rule by February 17, 1996. TVA letter to NRC dated February 15, 1996, (submitted for both units) notified NRC that Watts Bar had fully implemented the program.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
14 . 0 . 0	19	CI	LICENSE CONDITION – Report changes to Initial Test Program

In the original 1982 SER, this LICENSE CONDITION was intended to require TVA report to NRC within 30 days of modifying an approved initial test. In SSER7, the NRC accepted a commitment in TVA's July 1, 1991, letter to notify NRC within 30 days of any changes to the Startup Test Program made under 10 CFR 50.59.

Unit 2 action: Notify NRC within 30 days of any changes to the Startup Test Program made under 10 CFR 50.59.

In SSER3, the staff reviewed additional information and FSAR amendments through 46 addressing concerns identified by the staff in the FSAR. They concluded in SSER3 that the Initial Test Program (ITP), with the exception of open items as a result of modifications made to the program in subsequent amendments (through 53) for which the staff requested additional information, would meet the acceptance criteria of SRP section 14.2 and successful completion of the program would demonstrate functional adequacy of structures, systems and components.

In SSER5, the staff reviewed TVA submittals to address the open items from SSER3 and FSAR amendments through 55, and concluded that the program met the acceptance criteria of the SRP and was acceptable.

In SSER9, the staff stated that TVA commitments to reinstate the loss-of-offsite-power test for Unit 2 and revise the acceptance criteria for the reactor building purge system air flow rate (TVA letter dated July 10, 1991, for both units) were found acceptable to address two issues identified by the staff during their review of the FSAR through Amendment 67.

In SSER10, the staff agreed with TVA that there was no need to perform any natural recirculation test for Units 1 and 2 (See subsection 5.4.3.)

In SSER12, the staff evaluated the ITP based on Amendment 74 to the FSAR, which addressed most of the staff's concerns raised during review of Amendment 69, in which the ITP was completely revised. The staff found that Chapter 14, as revised by Amendment 74, was generally adequate and in accordance with review criteria with the exception of 7 items, which would be evaluated in later supplements.

In SSER14, the staff evaluated changes made by TVA in Amendments 84 and 86, as well as 5 TVA letters submitted during 1994 to resolve the issues identified by the staff in SSER12, and changes made in FSAR Amendment 88 to address concerns still open prior to that amendment. The staff found that, with the exception of open items that remained open pending receipt and review of TVA's responses, the WB Units 1 and 2 ITP description contained in FSAR Chapter 14, updated through Amendment 88, was generally comprehensive and encompassed the major phases of the program requirements.

In SSER16, SSER18 and SSER19, the staff evaluated the ITP through amendments 89, 90 and 91 respectively and stated each time that it found the program to be comprehensive and encompassing the major phases of the testing program guidance presented in the SRP.

A Unit 2 issue to verify capability of each common station service transformer to carry load required to supply ESF loads of 1 unit under LOCA condition in addition to power required for shutdown of non-accident unit was raised in SSER14, and the NRC stated that before an OL can be issued for Unit 2, TVA would have to demonstrate the capability of each CSST to carry the loads of one unit under LOCA conditions in addition to power required for shutting down the non-accident unit. TVA agreed with the NRC position in a January 5, 1995, letter and the issue was resolved in SSER16.

Unit 2 action: Amend FSAR Chapter 14 to reflect the capability of each CSST to carry the loads of one unit under LOCA conditions in addition to power required for shutting down the non-accident unit.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 0 . 0	0	C	Approved for both units in SER.
15 . 0 . 1		NA	Area not addressed in 1981 Standard Review Plan.
15 . 0 . 2		NA	Area not addressed in 1981 Standard Review Plan.
15 . 1 . 0	0	C	Approved for both units in SER.
15 . 1 . 1		NA	Addressed in 15.2.1
15 . 1 . 2		NA	Addressed in 15.2.1
15 . 1 . 3		NA	Addressed in 15.2.1
15 . 1 . 4		NA	Addressed in 15.2.1
15 . 1 . 5		NA	Addressed in 15.2.1 and 15.4.2.
15 . 2 . 0	0	OT	Approved for both units in SER. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 2 . 1	14	O	In SSER13, NRC reviewed TVA's use of the FACTRAN computer code for LOCA temperature distribution. NRC concluded that the transient analysis was acceptable. In SSER14, NRC approved the trip time delay functional upgrade as part of the Eagle 21 process protection system for low-low steam generator reactor trip. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.
15 . 2 . 2	0	C	Approved for both units in SER.
15 . 2 . 3	18	OT	In SSER18, NRC reviewed FSAR amendment 90. In FSAR amendment 90, TVA revised for the transient event of inadvertent ECCS actuation for both Units. TVA provided additional information for both units by letter dated October 12, 1995. In SSER18, NRC found the reanalysis acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 2 . 4	14	OT	15.2.4.1 Uncontrolled Rod Cluster Assembly Bank Withdrawal from Zero-Power Condition In SSER7, NRC reviewed additional analysis submitted for both units for a two pump, zero power, rod withdrawal. The NRC concluded the revision was acceptable. In SSER13, NRC accepted a change to a limiting condition for operation and bases changes to include a requirement that two reactor coolant pumps should be running whenever rods are capable of withdrawal in Mode 4. Unit 2 Action: Submit Technical Specifications. --- 15.2.4.4: OUTSTANDING ISSUE for evaluation of Boron dilution and single failure criteria In a letter dated November 2, 1984, TVA stated that the boron dilution alarm system receives signals from two independent channels which are independently powered. Additionally, testing of these circuits was described. The staff concluded in SSER4 that the system is adequately protected from single failure and closed this item. In SSER14, NRC reviewed a reanalysis of the accident associated with uncontrolled boron dilution and accepted the analysis. --- 15.2.4.6 Rod Cluster Control Assembly Ejection In SSER14, NRC accepted a change to the maximum cladding temperature for the rod ejection accident made in FSAR amendment 80. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 2 . 5	4	C	Approved for both units in SER subject to completion of Outstanding Issue in 15.2.4.4.
15 . 2 . 6		NA	Addressed in 15.2.1.
15 . 2 . 7		NA	Addressed in 15.2.1.
15 . 3 . 0	0	C	Approved for both units in SER.
15 . 3 . 1	15	OT	In SSER12, NRC reviewed the reanalysis of small break loss of coolant analysis (SBLOCA) for Units 1 and 2. NRC found the analysis acceptable. In SSER15, NRC reviewed additional changes to the SBLOCA for Units 1 and 2. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 2	14	OT	In SSER3, NRC reviewed proposed changes to the boron concentration requirement in the Boron Injection Tank and found them acceptable. In SSER14, NRC reviewed TVA application of the new steamline protection feature associated with the Eagle 21 upgrade for WBN Unit 1. The model resulted in the reanalysis of two ruptures: the main feedline and a steamline break outside of containment. Unit 2 Action: Perform analysis. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 3 . 3	14	OT	In SSER14, NRC reviewed TVA application of the new steamline protection feature associated with the Eagle 21 upgrade for WBN Unit 1. The model resulted in the reanalysis of two ruptures: the main feedline and a steamline break outside of containment. Unit 2 Action: Perform analysis. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 4	14	OT	In SSER14, NRC reviewed this section based on VANTAGE 5H fuel and found it acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 5	14	OT	In SSER14, NRC reviewed this section based on VANTAGE 5H fuel and found it acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 6	12	CI	LICENSE CONDITION - Anticipated Transients Without Scram (Generic Letter 83-28 Item 4.3) In SSER3, NRC performed an initial review of Generic Letter 83-28 for the Salem anticipated transients without scram events. A new license condition was established for GL 83-28 Item 4.3. In SSER5, the staff found TVA's response to a number of items in GL 83-28 acceptable, including Item 4.3, and thus eliminated this license condition. In a letter dated June 18, 1990, for both units, NRC confirmed that all issues under Item 4.3 were fully resolved. In SSER6, NRC continued the review. In SSER10, NRC completed the review of TVA's submittals for GL 83-28 and found them acceptable. In SSER11, a reference to Item 4.3 that was omitted in SSER 10 was added. In SSER12, NRC provided additional information on Items 3.1.3 and 3.2.3. NRC noted that TVA reported that there would be no post maintenance test requirements in the Technical Specifications for either the reactor trip system or other safety related components which could degrade safety. The NRC had no further concerns. CI in May 28 letter.
15 . 3 . 7	0	C	Approved for both units in SER.
15 . 4 . 0	0	C	Approved for both units in SER.
15 . 4 . 1	18	OT	In SSER5, NRC reviewed a change to the estimated fractions in leakage pathways for the release of radioactive material following a LOCA. In SSER9, NRC corrected the filter efficiency for organic iodine. The conclusions reached in the SER and supplements remained unchanged. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. In FSAR amendment 90, TVA increased the amount of leakage that enters the auxiliary building following a LOCA. In SSER18, NRC confirmed this was within the guidelines of 10 CFR Part 100. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 2	15	OT	In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 4 . 3	15	OT	LICENSE CONDITION – Steam Generator tube rupture In SSER2, NRC performed an initial evaluation of an actual Steam Generator Tube Rupture (SGTR) that occurred at Ginna. As part of the Westinghouse Owners Group (WOG), WBN committed to implement all corrective actions recommended by the WOG. In SSER5, NRC reviewed the WOG SGTR analysis and determined that plant specific information was required. In SSER12, the staff identified 5 items that required resolution involving 1) operator action times; 2) radiation offsite consequence analysis; 3) systems, 4) associated components credited for accident mitigation in SG tube rupture emergency operating procedures; and 5) system compatibility with bounding analysis. Items 2-5 were resolved in SSER12. In SSER14, the staff stated that a revised SG tube rupture analysis was more conservative and did not alter the conclusions of their Original safety evaluation. With regard to operator response times, TVA letters dated April 21, 1994, and August 15, 1994, and NRC letter dated June 28, 1994, dealt with simulator runs to address response times and operator performance during simulated SG tube ruptures. The staff concluded, after review of the TVA letters, that the times assumed in the tube rupture analysis were satisfactorily verified and deleted this condition. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 4	15	OT	In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 5	15	OT	In SSER4, NRC reevaluated the consequences of a fuel handling accident inside primary containment. NRC concluded WBN met the relevant requirements of GDC 61. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 6	0	OT	Approved for both units in SER. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 7	0	OT	Approved for both units in SER. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 5 . 0	0	C	Approved for both units in SER.
15 . 5 . 1	4	C	LICENSE CONDITION – Effect of high pressure injection for small beak LOCA with no auxiliary feedwater (NUREG-0737, II.K.2.13) In SSER4, the staff concluded that there was reasonable assurance that vessel integrity would be maintained for small breaks with an extended loss of all feedwater and that the USI A-49, "Pressurized Thermal Shock," review did not have to be completed to support the full-power license. NRC considered this condition resolved. C in NRC May 28, 2008 letter.
15 . 5 . 2	4	C	LICENSE CONDITION – Voiding in the reactor coolant system (NUREG-0737, II.K.2.17) The staff reviewed the generic resolution of this license condition in SSER4 and approved the study in question, thereby resolving this license condition.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 5 . 3	5	C	LICENSE CONDITION – PORV isolation system (NUREG-0737, II.K.3.1, II.K.3.2) NUREG-0737, II.K.3.1, II.K.3.2, "Auto PORV isolation/Report on PORV Failures" - Reviewed in SSER5 and resolved based on NRC conclusion that there is no need for an automatic PORV isolation system (NRC letter dated June 29, 1990). C in NRC May 28, 2008 letter.
15 . 5 . 4	16	CI	"Implementation of TMI Item II.K.3.5 (Automatic Trip of Reactor Coolant Pumps" – Reviewed in 15.5.4 of original 1982 SER; became License Condition 35. The staff determined that their review of Item II.K.3.5 did not have to be completed to support the full power license and considered this license condition resolved in SSER4. The item was further reviewed in Appendix EE of SSER16. CI in NRC May 28, 2008 letter. Unit 2 Action: Implement modifications as required.
15 . 5 . 5	16	CI	NUREG-0737, II.K.3.30, "Small Break LOCA Methods" and NUREG-0737, II.K.3.31, "Plant Specific Analysis" – The staff determined that their review of Items II.K.3.30 and II.K.3.31 did not have to be completed to support the full-power license and considered this LICENSE CONDITION resolved in SSER4. In SSER5, the staff further reviewed responses to these items, and concluded that the Units 1 and 2 FSAR methods and analysis met the requirements of II.K.3.30 and II.K.3.31. This item was further reviewed in Appendix EE of SSER16. Both of these items were CI in NRC May 28, 2008 letter. Unit 2 Action: Complete analysis for Unit 2.
15 . 6 . 0	0	C	Approved for both units in SER.
15 . 6 . 1	0	C	Approved for both units in SER.
16 . 0 . 0		OT	Unit 2 Action: Submit Technical Specifications.
16 . 1 . 0		NA	Area not addressed in 1981 Standard Review Plan.
17 . 0 . 0	0	C	Approved for both units in SER.
17 . 1 . 0	0	C	Approved for both units in SER. See 17.3.
17 . 2 . 0	0	C	Approved for both units in SER. See 17.3.
17 . 3 . 0	15	C	OUTSTANDING ISSUE - QA program The staff reviewed the description of the QA program in SSER2 and stated that they had resolved the list of open items for which the QA program for the operations phase applies with TVA and concluded that the description was in compliance with NRC regulations. The staff reviewed the organization for the QA program and the NQA Plan, and presented their conclusions in SSER5. They concluded that the program was acceptable for the operations phase of Watts Bar. It was noted, however, that Amendment 63 stated that identification of safety related features would be addressed later and the staff left the outstanding issue unresolved. In SSER10, the staff reviewed additional revisions to the QA program and stated that they did not change the staff's conclusions reached in SSER5. In SSER13, the staff concluded that TVA had established appropriate programmatic controls for identification of safety related features and considered this issue resolved. In SSER15, the staff listed additional revisions to the QA program without comment.
17 . 4 . 0	0	C	Approved for both units in SER. See 17.3.
17 . 5 . 0		NA	Area not addressed in 1981 Standard Review Plan.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
17 . 6 . 0		OV	10 CFR 50.65– Maintenance Rule Unit 2 Action: Implement Maintenance Rule for Unit 2 systems 1 month prior to fuel load
18 . 0 . 0	0	NA	See 18.1.
18 . 1 . 0	16	OV	NUREG-0737, I.D.1, "Control Room Design Review" - NRC reviewed in SSER5, SSER6, SSER15, and Appendix EE of SSER16. In SSER6, the staff concluded that the DCRCR program implemented for Unit 1 satisfied the programmatic requirements of Supplement 1, NUREG-0737. In SSER15, the staff conducted a final onsite audit of the Unit 1 DCRDR and concluded that the product implemented conformed to the DCRDR requirements of Supplement 1, NUREG-0737 and that the DCRDR special program had been effectively implemented. In SSER16, the staff reviewed a TVA reclassification of a human engineering deficiency and concluded that it was satisfactory. Unit 2 Actions: Complete the CRDR process. Perform rewiring in accordance with ECN 5982. Take advantage of the completed Human Engineering reviews to ensure appropriate configuration for Unit 2 control panels. See CRDR Special Program.
18 . 2 . 0	16	O	"CONCLUSIONS" left open until all items in subsection are closed.

STATUS CODE DEFINITIONS

C: CLOSED: Previous staff review of NUREG-0847 and/or supplements has closed the item either for both units at WBN or explicitly for WBN Unit 2.

CI: CLOSED/IMPLEMENTATION: Staff has approved either for both units at WBN or explicitly for WBN Unit 2; there is no change to the approved design; and implementation is recommended through Regional Inspection.

CT: CLOSED/TECHNICAL SPECIFICATIONS: Item has been approved either for both units at WBN or explicitly for WBN Unit 2; however, a change to the original approval requires submittal of the Technical Specifications and staff review.

NA: NOT APPLICABLE: Justification as to why a section / subsection is not applicalbe is provided in the ADDITIONAL INFORMATION column.

O: OPEN: No action or documentation is provided that shows the staff has reviewed the item for WBN Unit 2.

OT: OPEN/TECHNICAL SPECIFICATIONS: No action or documentation is provided that shows the staff has reviewed the item for WBN Unit 2, and the resolution is through submittal of a Technical Specification.

OV: OPEN/VALIDATION: The proposed approach has been approved for Watts Bar Unit 1; the same approach is proposed for use on WBN Unit 2 without change.

*** = See last page for status code definition.**

SAFETY EVALUATION REPORT AND SUPPLEMENTS (NUREG-0847) REVIEW MATRIX REVISION 1 CHANGES

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
2.1 .3	0	O	SRP requirement. Unit 2 Action: Update FSAR for present and projected population over the lifetime of the plant.
2.1 .4	0	O	"CONCLUSIONS" left open until all items in subsection are closed.
2.2 .1	0	O	SRP requirement. Unit 2 Action: Update FSAR for potential external hazards and hazardous materials.
2.2 .2	0	O	SRP requirement. Unit 2 Action: Update FSAR for projected annual number of aircraft flights.
2.3 .4	14	C	TVA updated information on portions of the metrology program in FSAR amendment 83. This was reviewed and found acceptable in SSER14.
2.3 .5	14	C	TVA updated information on portions of the metrology program in FSAR amendment 83. This was reviewed and found acceptable in SSER14.
2.4 .9	0	O	SRP requirement. Unit 2 Action: Update FSAR for present and projected use of local and regional groundwater.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
2 . 5 . 4	11	C	CONFIRMATORY ISSUE for design differential settlement of piping and electrical components Analysis was presented to staff in September 1983. Staff found analysis and results acceptable. Staff closed issue in SSER3. --- CONFIRMATORY ISSUE for analysis of sheetpile walls Staff performed audit in September 1982, and determined TVA had used reasonable assumptions. Staff closed issue in SSER3. --- CONFIRMATORY ISSUE for material and geometric damping in soil-structure interaction (SSI) analysis Staff performed audit in September 1982, and determined TVA had used reasonable assumptions. Staff closed issue in SSER3. --- OUTSTANDING ISSUE (1) on liquefaction beneath ERCW pipelines and Class 1E electrical conduit. Amendment 50 to the FSAR (May 1, 1984) provided a description of the underground barriers along the ERCW pipelines. Staff agreed the barriers provide sufficient confinement to any liquefied soil. Staff closed issue in SSER3. --- FSAR amendment 54-63 was reviewed in SSER9. NRC determined that the conclusions previously issued in the SER and SSER3 remained unchanged. --- The Special Program (SP) for Soil Liquefaction was reviewed in SSER11. NRC IR 50-390/92-45 and 50-391/92-45 concluded that TVA had correctly implemented the SP and that it was closed. SSER11 accepted the implementation for WBN Unit 1. Per TVA letter dated August 3, 2007, implementation of the Soil Liquefaction SP is complete for both units.
3 . 2 . 0	14	C	In SSER14, the staff reviewed revisions to Table 3.2-2, "Summary of Criteria - Mechanical System Components", and found the table acceptable.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.2 .1	8	C	CONFIRMATORY ISSUE for seismic classification of structures, systems, and components important to safety The staff reviewed Amendment 49 to FSAR and actions implemented by TVA to address ERCW seismic classification in SSER3 and found them acceptable, pending verification of actions. Staff closed issue on ERCW seismic category upgrade and seismic classification in SSER5. --- CONFIRMATORY ISSUE for ERCW upgrade to seismic category 1 Staff verified that required portion of ERCW had been upgraded or replaced satisfactorily in SSER5 and closed this issue. --- In SSER6, the staff addressed and resolved an issue on Category I boundary. --- OUTSTANDING ISSUE involving seismic classification of cable trays and conduits In SSER6, staff identified an issue on seismic classification of cable trays and conduits being categorized as I(L). In its May 8, 1991, letter, TVA proposed to analyze conduits as Seismic Category I subsystems. Additionally, in a September 18, 1991 letter, TVA agreed to perform cable tray qualification using conventional linear elastic analysis methods, considering nonlinear response behavior on a case-by-case basis and to submit these cases to the staff for approval. The staff resolved this issue in SSER8.
3.2 .2	9	OV	Section 3.2.2 of SSER3 discusses confirmatory issues for seismic classification and upgrade of ERCW that are already included in 3.2.1. --- Staff accepted implementation of Heat Code Traceability CAP for Unit 1 in SSER7. Unit 2 Action: Complete CAP using Unit 1 approach. --- Staff reviewed updated information in Amendment 68 on use of codes and standards in SSER9 and stated that prior conclusions were unchanged.
3.5 .1	14	C	In SSER9, the staff determined that a new spectrum used for the design of a new DG building and other Category I structures built after 1979 was acceptable. In SSER14, clarification in Amendment 79 on internal missile sources was reviewed and did not change prior conclusions. Staff also reviewed revised information on turbine missiles and concluded that impact of potential missiles was insignificant.
3.5 .3	0	C	Approved for both units in SER.
3.6 .0	11	OV	In SSER6, the staff accepted TVA approaches involving arbitrary intermediate breaks, determination of intermediate break locations and analysis of jet impingement loads. In SSER11, the staff reviewed results of the MELB Special Program and determined that the conclusion in the SER finding plant design for protection against piping failures outside containment was still valid. Unit 2 Action: Complete Special Program using the Unit 1 approach.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.6.1	14	C	OUTSTANDING ISSUE involving main steam line break (MSLB) outside containment In a letter dated November 30, 1992, TVA submitted a new evaluation for both Units 1 and 2 accounting for increased environmental temperatures in the MSVV rooms due to release of superheated steam and later submitted, by letter dated March 28, 1994, additional information related to the assumptions made in this analysis for both units. The staff reviewed this information together with their detailed evaluation and acceptance of the same methodology applied at Sequoyah and concluded that the MSLB analysis for the WBN MSVV rooms, including the effects of superheated steam, was acceptable and identified this issue as resolved in SSER14. --- In SSER14, the staff reviewed the construction of response spectra for the steel containment vessel resulting from the compartment pressure transients caused by pipe break and TVA modeling of the SCV for both units (see TVA letter dated December 30, 1993) and concluded that the methodology for obtaining shell dynamic displacements and construction of spectra were acceptable.
3.6.2	14	C	The 3.6.2 discussion in SSER14 on response spectra for the SCV refers to the evaluation provided in 3.6.1.
3.6.3	12	C	New section in SRP 1987. Approved for both units in Appendix J of SSER5. The staff concluded in SSER12 that TVA may eliminate pressurizer surge line rupture from the design basis for Units 1 and 2.
3.7.0	6	OV	The staff concluded in SSER6 that FSAR section 3.7 which was added to describe Set A, Set B and Set C seismic analysis was consistent with the Seismic Analysis CAP. Unit 1 Action: Complete CAP using the Unit 1 approach.
3.7.1	16	OV	OUTSTANDING ISSUE involving update of FSAR for seismic design issues The staff reviewed FSAR Amendment 68 and found that required changes had been incorporated into the FSAR, as committed to in TVA letter dated December 18, 1990, for Units 1 and 2, and issue was deemed resolved in SSER6. SSER9 stated the Seismic Analysis CAP was acceptably implemented for Unit 1. SSER16 discusses use of a vertical PGA of .15g rather than .18g for Set B spectra and determined that it was acceptable. Unit 2 Action: Complete CAP using Unit 1 approach.
3.7.2	16	OV	3.7.2.1.2: OUTSTANDING ISSUE involving mass eccentricity In a letter dated May 8, 1991, for Units 1 and 2, TVA provided clarification that actual mass eccentricities from such items as equipment hatch and lock used in evaluating the steel containment vessel for an earthquake load were replaced by a 5% accidental eccentricity. This was demonstrated to be conservative. TVA also proposed a revision to the FSAR to document this change. The staff found this acceptable and resolved this issue in SSER8. --- 3.7.2.1.2: OUTSTANDING ISSUE involving comparison of Set A vs. Set B response The staff considered this item (opened in SSER6) resolved in SSER11 based on audits and inspections since SSER6. Unit 2 Action: Complete Seismic Analysis CAP using the Unit 1 approach. --- In SSER16, the staff discussed the review and acceptability of the NSSS-ICS modeling for seismic analysis.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.7.3	12	OV	OUTSTANDING ISSUE involving number of peak cycles to be used for OBE In SSER6, the staff identified an issue involving the number of peak cycles to be used for OBE. In a letter dated May 8, 1991, for both units, TVA proposed to revise the FSAR for ASME Section III Class I piping analysis to include the assumption of 5 OBEs and 1 SSE and a minimum of 10 peak stress cycles per event. The staff accepted this in SSER8. --- OUTSTANDING ISSUE involving use of code cases, damping factors for conduit and use of worst case, critical case and bounding case In SSER6, the staff identified outstanding issues involving code case use, damping factors for conduit and use of worst case, critical case and bounding case. Deficiencies identified in the use of worst case, critical case and bounding calculations were resolved in IR 50-390/93-201, and this issue was considered resolved for Unit 1 in SSER12. Unit 2 Action: Addressed in CAP/SP. The Unit 1 approach will be used for Unit 2. --- OUTSTANDING ISSUE involving 1.2 multi mode factor In SSER6, the staff identified an issue involving a 1.2 multi-mode factor. In SSER8, the staff continued to review the use of a multi-mode factor of 1.2. The staff reviewed verification studies performed by TVA to justify the use of a 1.2 multi-mode factor in seismic evaluation of certain sub systems in SSER8 and SSER9 and, after TVA provided further confirmation of supporting calculations, the use of Complete Quadratic Combinations and validity of two degree of freedom predictions in a letter dated October 10, 1991, for both units, the staff considered this issue resolved in SSER9. --- Conduit Supports Corrective Action Program. Process was reviewed and determined to be acceptable for Unit 1 in SER dated September 1, 1989. Unit 2 Action: Addressed in CAP/SP. The Unit 1 approach will be used for Unit 2. --- In SSER6, the staff reviewed several other seismic analysis considerations including combination of components of earthquake motion, use of load factors in simplified analysis of equipment, consideration of torsional effects of eccentric masses in piping analysis; damping values for cable trays, HVAC and equipment and components; analysis of mounting for equipment and components; and loads and load combinations used in design of HVAC ducts and supports and found them acceptable. In SSER7, the staff reviewed the seismic design of the Refueling Water Storage Tank, the only safety related above ground vertical steel tank in the plant, and found it acceptable.
3.8.0	9	C	OUTSTANDING ISSUE involving load combinations and stress allowables In response to staff concerns regarding use of ductility ratio when considering thermally induced stresses, TVA stated in a letter dated April 6, 1992, for both units, that they would use a methodology consistent with SRP 3.8.4 for the design of steel members and use the linear elastic provision of DG-C 1.6.12, Rev. 1, "Evaluation of Steel Structures with Thermal Restraint," except for the energy balance provision of Section C.2.3.1. The staff found this acceptable. TVA also agreed, in its May 8, 1991, letter for both units, that any further sampling of structural welds after the issuance of NCIG-2, Rev. 2 would be to that revision. This issue was resolved in SSER9.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 8 . 1	3	C	CONFIRMATORY ISSUE - verify buckling methodology In response to staff concern, TVA submitted a letter dated May 16, 1984, for both units, stating that TVA calculations already accounted for new information from NRC-sponsored research programs, particularly information concerning reinforcement around shell (vessel) opening. Based on their review of the response, the staff closed this issue in SSER3.
3 . 8 . 2	7	C	The staff accepted implementation of the Concrete Quality Special Program for Unit 1 in SSER7. This program is considered closed for Unit 2 based on the work performed for Unit 1. The was identified in a TVA letter dated August 3, 2007, WBN - Unit 2 - Reactivation of Construction Activities
3 . 8 . 3	16	C	The staff reviewed materials, allowable stresses and load cases for the watertight equipment hatch cover in an FSAR Table in Amendment and found them acceptable for both units in SSER14. The staff reviewed allowable stresses for Category I structural steel and found them acceptable for both units in SSER16.
3 . 9 . 1	13	OV	OUTSTANDING ISSUE involving assumption in piping analysis for water-hammer due to check valve slam In SSER6, the NRC expressed concern regarding TVA's piping analysis that postulated failure of certain supports, TVA submitted an August 4, 1992, letter stating that, where possible, supports were upgraded in the analysis to maintain structural integrity during the postulated loading scenario. The issue was resolved in SSER13. Unit 2 Action: Modify supports as needed.
3 . 9 . 2	14	C	The staff reviewed "Pre-operational Vibration and Dynamic Effects Testing on Piping", and found this area acceptable in SSER14.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3.9.3	15	OV	3.9.3.1: OUTSTANDING ISSUE involving use of experience data to qualify category I(L) piping The staff identified a concern regarding the use of experience data as a method of seismic qualification of Category I(L) piping in SSER6. TVA stated in a letter dated December 18, 1990 for both units, that it was performing a verification program to validate the original seismic design basis for Category I(L) piping, including a screening criteria based on earthquake experience data to identify items requiring further evaluation and bounding case analysis to demonstrate the conservatism of the screening criteria. In a September 20, 1991, for both units, letter, TVA provided revised criteria for the bounding case analysis. Based on the staff's evaluation, the issue was considered resolved in SSER8. --- 3.9.3.3: LICENSE CONDITION - Relief and safety valve testing (II.D.1) Staff found TVA approach in response to this issue, using information from EPRI valve test program and performing modifications to safety and relief discharge piping and supports, was acceptable. Issue was considered resolved in SSER3. --- 3.9.3.3: OUTSTANDING ISSUE involving operating characteristics of main steam safety valves The staff identified a concern with operating characteristics of main steam safety valves in SSER6. In a letter dated June 21, 1991, TVA responded to NRC concerns regarding the design and installation of MSSVs stated that all valves and piping components were analyzed for all MSSV discharge loads acting simultaneously, combined with other required loads and this was accepted by the staff. In the same letter, TVA also provided the method used to establish the MSSV adjustment ring settings for plant valves and this was acceptable to the staff. This resolved the issue in SSER7. Unit 2 Action: Provide basis of applicability of Unit 1 MSSV analysis to Unit 2. --- 3.9.3.4: CONFIRMATORY ISSUE involving baseplate flexibility and its effect on anchor bolt loads The staff continued to review baseplate flexibility and its effect on anchor bolt loads. The issue remained open in SSER6. The TVA response to this issue, in a letter dated July 26, 1991, for both units, described an update to the previous response for B 79-02 and its civil design standard for concrete anchorage, which incorporated an increase in anchor stiffness and consideration of prying forces for thin baseplates analyzed by hand. The staff determined that this adequately resolved the issue in SSER8. --- 3.9.3.4: OUTSTANDING ISSUE involving stiffness and deflection limits for seismic Category I pipe supports The staff questioned new support stiffness and deflection limits for seismic Category I pipe supports in SSER6. The TVA program to demonstrate that change in design criteria which uses stiffness and deflection limits for Category I pipe supports did not compromise the adequacy of pipe supports, was submitted in a TVA letter dated September 30, 1991, for both units, and was found to be acceptable by the staff and the issue was resolved in SSER8. --- 3.9.3.4: OUTSTANDING ISSUE, staff was awaiting TVA concurrence on their position with respect to margin for critical buckling of pipe supports In a letter dated May 14, 1984, TVA provided results of a sampling program and determined that compressive stresses for pipe supports did not exceed acceptance criteria established by NRC and staff considered this issue resolved in SSER4.

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			The staff reviewed proposed new criteria for service load combinations and associated stress limits for ASME Code Class 1, 2, and 3 pipe supports in SSER6 and found them acceptable.
			In SSER15, the staff found the response to NUREG-0737, Item II.D.1, "Performance Testing of Relief and Safety Valves," acceptable.
3.9.6	20	OT	LICENSE CONDITION on inservice testing of pumps and valves
			The staff stated that they were reviewing TVA's response to GL 89-04, addressing acceptable IST programs and the license condition on inservice testing of pumps and valves remained open in SSER5. TVA committed to submit a revised ASME Section XI Inservice Pump and Valve Test Program six months before the projected date of operating license issuance in an August 21, 1989, letter. On this basis, the staff considered that the proposed license condition was no longer required in SSER12.

			OUTSTANDING ISSUE required that Technical Specifications include limiting condition for operation that requires plant shutdown or system isolation when leak limits are not met. Staff had not reviewed Technical Specifications.
			The safety evaluation in SSER14 states that the staff did not find any IST issues that would prevent issuance of an operating license for Unit 1. The item was resolved in SSER14.
			Unit 2 Action: Submit Technical Specifications.

			In SSER18, the staff approved a proposed alternative for set pressure testing of the three pressurizer safety relief valves that provide overpressure protection for the reactor coolant system.
			In SSER20, the staff discussed 13 issues that remained to be resolved for the pump and valve inservice testing program and stated that they had been addressed in a manner that complies with the staff's position and they granted relief for an additional relief request.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
3 . 10 . 0	8	OV	In SSER1 the staff discussed their evaluation of the TVA program for qualification of electrical and mechanical equipment for seismic and other loads, and opened the OUTSTANDING ISSUE involving adequacy of frequency test, peak broadening of response spectra, reconciling actual field mounting by welding vs. testing configuration mounted by bolting and need for surveillance and maintenance programs to address aging. The staff provided a status of these issues in SSER3 and closed peak broadening of response spectra, use of damping values, consideration of nozzle loads, and status of seismic qualification. Other specific issues were closed in this supplement as well. In SSER5, the staff stated that this issue remained open. In a letter dated December 1, 1982, TVA provided justification for single-frequency tests to seismically qualify the Reactor Protection System cabinet. This showed that test response spectra (TRS) were substantially higher than broadened required response spectra (RRS) throughout the required frequency range. The staff evaluated test results and building seismic behavior and considered this aspect of the testing issue closed in SSER6. Staff concerns on the impact of aging on seismic performance were resolved in SSER6 based on discussions with TVA technical personnel and review of maintenance and surveillance instruction manuals. There was a specific issue on installing spacers for the 125V DC vital batteries as was done during qualification testing and required by the manufacturer. The issue was closed in SSER6 when it was determined that spacers had been installed. With regard to the overall issue on adequacy of testing, the staff performed an audit as part of Appendix S of SSER9. This included a review of the TVA approach, criteria and action plan to address effect of directional coupling and verification that acceleration at each device location is less than .95g because relay chatter at higher acceleration levels is expected. TRS enveloped RRS for all directions. The staff found the above to be in accordance with SRP 3.10 and IEEE 344-1975 and closed the issue. For reconciling the impact for equipment actually mounted using welding but tested with mounting by bolting, in-situ test results were provided to NRC (in letters dated April 30, 1985, and January 30, 1986) along with Westinghouse report on seismic qualification by analysis and testing for the main control board. The staff reviewed these results and on the basis of the consistency of all results provided, concluded that the issue was resolved in SSER6. Unit 2 Action: Complete Equipment Seismic Qualification CAP using the Unit 1 approach. --- In SSER4, the staff reviewed an issue on the vibration of deep draft pumps and found it acceptable. In SSER8, the staff accepted a proposed revision to FSAR Section 3.7.3.16 to indicate that the alternative seismic qualification method is to follow the requirements of IEEE Standard 344-1971 and address the guidelines of SRP Section 3.10.
4 . 2 . 1	13	OT	In SSER13, NRC determined that internal fuel rod pressure was not key design information that needed to be included in the WBN Unit 1 Technical Specifications. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
4 . 2 . 3	13	OT	CONFIRMATORY ISSUE - identify margins and to offset reduction in DNBR due to fuel rod bowing and incorporating residual bow penalty into the Technical Specifications. In SSER2, the staff concluded TVA had an acceptable means of analyzing the effects of fuel rod bowing and determining any residual rod bowing penalties on the departure from nucleate boiling ratio and total peaking power. Staff closed the issue in SSER2. In SSER10, NRC reviewed design loading conditions for the reactor vessel internals and raised an issue on the seismic analysis of the control rod drive mechanisms (CRDMs). TVA's letter dated June 15, 1993, for both units discussed CRDM seismic operability. In SSER13, the NRC documented that concerns related to CRDM seismic qualification had been resolved. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 2 . 5	0	OT	"FUEL DESIGN CONCLUSIONS" left open until all items in subsection are closed. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 3 . 1	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 3 . 2	15	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle. --- In SSER15, NRC reviewed TVA's proposed changes to the FSAR from a reanalysis of Pressurized Thermal Shock. The analysis was subsequently incorporated into the FSAR.
4 . 3 . 3	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 3 . 4	13	OT	In SSER13, NRC reviewed the V5H fuel design and found use of V5H fuel acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 2	12	OT	In SSER12, NRC evaluated a change in reactor coolant flow (upflow) for both units. NRC concluded in a July 28, 1993 letter for both units that the proposed upflow modification was acceptable. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
4 . 4 . 3	16	OT	OUTSTANDING ISSUE concerning removal of RTD bypass system This outstanding issue was opened in SSER6. Staff issued an SER dated June 13, 1989, for Unit 1 only that approved replacement of the RTD bypass system with an Eagle-21 microprocessor system for monitoring reactor coolant temperature. NRC provided their initial assessment of the RTD bypass removal for WBN Unit 1 in SSER8. This SER was reproduced in SSER8, Appendix R. In SSER16, NRC reviewed the flow measurement uncertainty value for the reactor coolant system. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- In SSER12, NRC evaluated a change in reactor coolant flow (upflow) for both units. NRC concluded that the proposed upflow modification was acceptable. --- In SSER13, NRC reviewed thermal hydraulic methodologies and concluded that the V5H thermal-hydraulic design was acceptable for Watts Bar. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 4	13	OT	In SSER13, NRC reviewed TVA's responses to a request for additional information concerning fuel rod bowing and crud buildup for WBN Unit 1. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
4 . 4 . 5	16	O	CONFIRMATORY ISSUE / LICENSE CONDITION on review of Loose Parts Monitoring System (LPMS) startup report and inclusion of limiting conditions for LPMS in Technical Specifications TVA letters dated February 25, 1982, and November 10, 1982, provided a description of operator training and an evaluation of conformance to RG 1.133. In SSER3, the staff closed the confirmatory issue and opened a license condition to track submittal of the startup test results and the alert level setting. In SSER5, the staff closed the LICENSE CONDITION to a TVA commitment to provide the startup test results and the alert level settings made in a letter dated September 19, 1990, for both units. In SSER16, NRC reviewed additional information and revised commitments associated with the LPMS. For Unit 2 due to obsolescence, TVA will replace the LPMS. Unit 2 Action: Provide the startup test results and the alert level settings.
4 . 4 . 8	10	O	LICENSE CONDITION - Detectors for Inadequate core cooling (II.F.2) GL 82-28 / NUREG-0737, II.F.2, "Inadequate Core Cooling Instrumentation System" – In the original SER, the review of the ICC instrumentation was incomplete. The January 24, 1992, letter superseded the previous responses on this issue. TVA letter for Units 1 and 2 dated January 24, 1992, committed to install Westinghouse ICCM-86 and associated hardware. NRC completed the review for Units 1 and 2 in SSER10. For Unit 2 due to obsolescence of the ICCM-86 system, TVA intends to install the Westinghouse Common Q Post-Accident Monitoring System. Unit 2 Action: Install Westinghouse Common Q PAM system.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
4 . 4 . 9	0	O	"CONCLUSION" left open until all items in subsection are closed.
5 . 1 . 0	6	O	The staff stated that the Eagle 21 microprocessor system was an acceptable replacement of the resistance temperature detector (RTD) bypass system for monitoring reactor cooling temperature in SSER5. In SSER6, the staff noted that TVA had incorporated the information for this new design into the FSAR and said they would track results of the review of this design change as an outstanding issue - Removal of RTD Bypass System (See 4.4.3). Unit 2 Action: Provide additional information for NRC review per 7.2.1
5 . 2 . 2	15	C	OUTSTANDING ISSUE on staff review of sensitivity study of required safety valve flow rate versus trip parameter TVA letter dated April 18, 1983, provided the safety valve sizing information and information on differences with the reference plant. Staff closed issue in SSER2. --- In SSER15, the staff stated that subject to resolution of NUREG-737 Items II.D.1 (performance testing of relief and safety valves) and II.D.3 (indication of relief and safety valve position), overpressure protection at hot operating conditions will comply with the guidelines of SRP 5.2.2 and requirements of GDC 15. They noted that these items were found to be acceptable.
5 . 2 . 4	16	O	LICENSE CONDITION – Inservice inspection (ISI) program The ISI program is required to be submitted within 6 months of the date of issuance of the operating license. The applicable ASME Code edition and addenda are determined by reference to 50.55a(b) 12 months preceding the date of issuance of the OL. The staff reiterated this in SSER10. In SSER12, the LICENSE CONDITION was resolved by a TVA commitment to submit the program within six months after receiving the operating license. Unit 2 action: Submit Unit 2 ISI program. --- OUTSTANDING ISSUE - Unit 2 PSI program submitted April 30, 1990, with a partial listing of relief requests. This item tracked the staff review. In the SER, the preservice inspection program was still under review. NRC reviewed the Unit 1 PSI program in SSERs 10, 12, and 16. Unit 2 Action: Submit Unit 2 PSI program.
5 . 2 . 5	12	C	In SSER9, the staff stated that since the UHI system has been eliminated from the WB design , the previous discussion of this system in the SER no longer applies, but the conclusions reached in the SER were still valid. In SSER11, the staff reviewed valve stem leakage and stated that the staff's prior conclusions about valve stem leakage were not affected. In SSER12, the staff retracted the requirement identified in the SER that if leakage is alarmed and confirmed in a flow path with no indicators, then the Technical Specifications require a water inventory material balance be initiated within one hour. The staff also provided a clarification of SER wording related to detection of intersystem leakage through check valves and stated that this did not change prior staff conclusions and the reactor coolant pressure boundary system remains acceptable.
5 . 2 . 6	16	C	In SSER16, the staff reviewed the analysis of the RPV and internal components and found the use of the WECAN computer code acceptable.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
5 . 3 . 1	14	C	The staff reviewed TVA's submittal on reactor vessel irradiation in SSER11 and stated that the WB reactor vessels acceptably satisfy the requirements of 10 CFR 50.61. In SSER14, the staff determined that TVA complied with all the requirements in the current Appendix G, 10 CFR Part 50 without exemptions and the previously approved exemptions were no longer needed.
5 . 3 . 2	16	OT	OUTSTANDING ISSUE - P-T limits for Unit 2 not provided. Staff will review as part of Unit 2 Technical Specifications. In the original 1982 SER, NRC indicated that the review of the Unit 2 P-T limits would be completed as part of the review of the Unit 2 Technical Specifications. In SSER16, the staff found the pressure temperature limits methodology and the pressure temperature limits report for Unit 1 acceptable. Unit 2 action: Submit P-T limits.
5 . 3 . 3	0	OT	OUTSTANDING ISSUE for staff to complete evaluation of Unit 2 after receipt of P-T limits In the original 1982 SER, NRC indicated that the review of the Unit 2 P-T limits would be completed as part of the review of the Unit 2 Technical Specifications. Unit 2 action: Submit P-T limits.
5 . 4 . 2	4	C	5.4.2.2: OUTSTANDING ISSUE for staff to evaluate TVA's proposed resolution to concerns about flow induced vibrations in Model D-3 SGs pre-heat region In the original 1982 SER, the staff concluded that because of the generic problem of tube degradation caused by flow induced vibration in Westinghouse model D steam generators, operation would be limited to 50%. In SSER1, the staff continued to monitor activities associated with proposed modifications to the pre-heater region of the SGs to reduce impingement of water on tubes in this area and eliminate the vibration responsible for wear of the SG tubes. TVA's May 27, 1983, letter committed to implement the NUREG-0966 modifications to address this. In SSER4, the staff concluded the modification was acceptable to operate at 100%. In a letter dated December 17, 2008, TVA confirmed that these modifications were performed for WBN Unit 2.
5 . 4 . 3	11	CI	CONFIRMATORY ISSUE to verify installation of an RHR flow alarm and proper function of dump valves when actuated manually In the SER, staff accepted TVA's commitment to provide, before startup, an RHR flow alarm to alert the operator to initiate alternate cooling modes in the event of loss of RHR pump suction. SSER2 resolved testing of dump valves. The staff verified that the alarm had been installed in SSER5, resolving the confirmatory issue. Unit 2 action: Verify alarm installation. --- CONFIRMATORY ISSUE involving natural circulation test to demonstrate ability to cool down and depressurize the plant, and that boron mixing is sufficient under such circumstances; or, if necessary, other applicable tests before startup after first refueling Branch Technical Position requires a natural circulation test with supporting analysis to demonstrate the ability to cool down and depressurize the plant and that boron mixing is sufficient. Comparison with performance of previously tested plants of similar design is acceptable, if justified. July 11, 1991, TVA letter, for both units, provided an assessment of the acceptability of the Diablo Canyon natural circulation tests to WBN. In SSER10, the NRC found the methods and conclusions acceptable. The staff corrected the wording in SSER10 in SSER11 and stated that this did not alter the conclusion reached.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
5 . 4 . 5	12	CI	LICENSE CONDITION - NUREG-0737, II.B.1, "Reactor Coolant System Vents" - In the original SER, the NRC found TVA's commitment to install reactor coolant vents acceptable pending verification. In SSER2, the staff found venting guidelines acceptable. Installation was completed for Unit 1 only in SSER5 (IR 390/84-37) and the staff stated that the LC was no longer necessary. In SSER12, the staff included the safety evaluation for the RCSV system. The staff concluded that the high point vent system was acceptable subject to satisfactory completion of seven items that were described as on-going or planned activities associated with completion of the WB licensing process. They stated that none required additional review with respect to the SER nor would they change the SER, provided they were satisfactorily completed. TVA was asked to submit a letter prior to receipt of an OL stating how and when these items were completed. The staff stated that when these items were satisfactorily implemented, the RCSV system would be acceptable. Unit 2 Action: Verify installation of reactor coolant vents.
6 . 2 . 1	15	CT	6.2.1.1: CONFIRMATORY ISSUE involves reviewing analysis that ensures that containment external pressure will not exceed design value of 2.0 psi In the original 1982 SER, NRC indicated it would confirm the contention that containment external pressure transients could not exceed the design value of 2.0 psig. TVA submitted the information June 4, 1982. In SSER3, NRC concluded that the design provided adequate protection against damage from external pressure transients. --- In SSER5, the staff reviewed a revised long term containment analysis for the design basis LOCA in support of a proposed reduction in the limit for minimum allowable weight of ice in the condenser and found it acceptable. Additionally, the staff verified that containment pressure and water level monitors were installed in Unit 1. Thus, License Conditions 6d and 6e were resolved (these are discussed with the other NUREG-0737 issues). In SSER7, the staff resolved their concerns regarding local temperatures near MSLBs inside containment and their impact on equipment qualification. In SSER12, the staff reviewed TVA's basis for deleting requirements for a 20,000 ppm boron concentration in the boron injection tank and determined that this would not significantly affect the environmental response of the containment or the safe shutdown equipment therein. In SSER14, the staff reviewed revisions to a number of containment design parameters and concluded that none affect conclusions reached in the SER or supplements. In SSER15, the staff reviewed the containment barrier seals and associated surveillance requirements and concluded that a revised divider barrier seal surveillance program was appropriate for Unit 1. Unit 2 Action: Review Unit 2 Technical Specifications with respect to divider barrier seal surveillance program.
6 . 2 . 2	7	C	In SSER7, the staff determined that hot standby was an acceptable mode following a main steamline break and the containment cooling system modifications were acceptable.
6 . 2 . 3	16	C	In SSER16, the staff reviewed Amendment 89 to the FSAR and deletion of the high-radiation signal from the auxiliary building exhaust vent monitors and found it acceptable.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 2 . 4	12	CT	CONFIRMATORY ISSUE to install safety grade isolation valves on 1" chemical feed lines joining feedwater lines to main steam line. LICENSE CONDITION – Modification of chemical feedlines In the original 1982 SER, the containment isolation provisions for the main and auxiliary feedwater lines, feedwater bypass lines and the chemical feedlines to the steam generators did not meet GDC 57. This was resolved by FSAR Amendment 55. In SSER5, the NRC concluded that the containment isolation provisions for the main and auxiliary feedwater lines, feedwater bypass lines and the chemical feedlines were acceptable. --- OUTSTANDING ISSUE for NRC to complete review of information provided by TVA to address Containment Purging During Normal Plant Operation LICENSE CONDITION - Containment isolation dependability In the original 1982 SER, NRC concluded that WBN met all the requirements of NUREG-0737, item II.E.4.2 except subsection (6) concerning containment purging during normal operation. In SSER3, the outstanding issue was closed and the LICENSE CONDITION was left open. NRC completed the review and issued a TER for both units on July 12, 1990. NRC concluded that the isolation valves can close against the buildup of pressure in the event of a design basis accident if the lower containment isolation valves are physically blocked to an opening angle of 50 degrees or less. (SSER5) Unit 2 Action: Reflect valve opening restriction in the Technical Specifications. --- OUTSTANDING ISSUE involving containment isolation using closed systems This outstanding issue was opened in SSER7. In SSER12, the NRC concluded that the systems in question were "closed loops outside containment" and reaffirmed the previous conclusion of acceptability.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 2 . 5	8	O	OUTSTANDING ISSUE for review of TVA provided additional information relative to discussion added to FSAR to address analysis of the production and accumulation of hydrogen within containment following onset of a LOCA In the original 1982 SER, NRC indicated that additional information was required concerning the analysis of the production and accumulation of hydrogen within the containment during a design basis LOCA. This information was provided in FSAR amendments and evaluated by NRC in SSER4. In SSER4, the NRC concluded that the design of the combustible gas control system was acceptable and the outstanding issue closed. Unit 2 Action - The hydrogen recombiners will be removed from the Unit 2 design and licensing basis based on 10 CFR 50.44 (final rule September 16, 2003) and abandoned in place. This portion has a status of Open. --- LICENSE CONDITION – (6f) Accident monitoring instrumentation II.F.1 – containment hydrogen In SSER5, NRC closed the LICENSE CONDITION for Unit 1 only (IR 390/84-85). Unit 2 Action: Verify installation of containment hydrogen accident monitoring instrumentation. This portion has a status of Closed/Implementation only per NRC May 28, 2008, letter. --- LICENSE CONDITION – (9) Hydrogen control measures In the original 1982 SER, an LC was raised to track resolution of Unresolved Safety Issue A-48, "Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment." In SSER8, the NRC reviewed the hydrogen mitigation system (igniters) and concluded it met the requirements of the final rule {10 CFR 50.44(c)(3)}.
6 . 2 . 6	19	C	In SSER4, the staff approved exemption from certain requirements of Appendix J to 10 CFR 50 for both units. In SSER19, the staff found a revised schedule for the exemption approved in SSER4 acceptable. In SSER5, the staff found there was no radiological consequence to an increase in the bypass leakage rate for the emerging gas treatment system and found the increase acceptable.
6 . 3 . 0	0	C	Approved for both units in SER.
6 . 3 . 1	11	OT	OUTSTANDING ISSUE - involving removal of upper head injection system The Upper Head Injection (UHI) system design was approved in the original 1982 SER. TVA letter dated September 19, 1985, informed NRC that UHI would not be installed on Unit 2. The staff stated in SSER6 that they were continuing to review TVA's submittal. In SSER7, NRC concluded it was acceptable to delete UHI from both units. In SSER11, the staff stated that the revision of the design code for ECCS piping from B31.1 to ASME Section III did not change the conclusions made in the SER and previous SSERs. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 3 . 2	5	OT	In SSER5, the staff reviewed TVA's approach to maintaining ECCS effectiveness by ensuring that no single failure would be able to energize the coils of the valve operators and found it acceptable. The staff also reviewed TVA's response to Issue 4 of NUREG-0138, Resequencing of ECCS loads following SI signal reset followed by a loss of offsite power. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
6 . 3 . 3	9	OT	OUTSTANDING ISSUE - involving containment sump screen design In the original 1982 SER, the staff approved the proposed sump design in the FSAR. A deviation between the installed and proposed design was discovered during an NRC inspection. In SSER9, the staff concluded that the as-installed sump screen was acceptable. --- CONFIRMATORY ISSUE - provide a detailed survey of insulation material that could be debris post-LOCA In the original 1982 SER, NRC found the design of the containment sump against debris acceptable subject to the acceptability of a detailed survey of insulation materials. In SSER2, the NRC review of the survey confirmed the staff's initial conclusion that the design to provide protection against sump debris was acceptable. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
6 . 3 . 5	0	O	Closure based on 6.3.1 to 6.3.3.
6 . 4 . 0	18	C	In SSER5, the staff concluded that removal of the main control room air intake chlorine detector was acceptable. In SSER11, they stated that FSAR Amendment 69 on control room isolation did not change previous conclusions. In SSER16, the staff concluded that the control room design satisfied the requirements of GDC 19 and the guidelines of NUREG-0737, Item III.D.3.4. In SSER18, the staff reviewed updated control room air flow rate data and dose analysis, as provided in Amendment 90, and determined that the changes did not affect conclusions reached in the SER or its supplements. See 18.1.0 also.
6 . 5 . 1	5	C	In SSER5, the staff found the Reactor Building Purge Ventilation System acceptable.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
6 . 6 . 0	15	O	OUTSTANDING ISSUE on additional information required on preservice inspection program and identification of plant specific areas where ASME Code Section XI requirements cannot be met and supporting technical justification NRC reviewed the preservice inspection program (PSI) for Unit 1 only in SSER10 and on the basis of a TVA commitment to submit an inservice inspection program within 6 months after receiving an operating license, considered a proposed LC for an ISI no longer required. In SSER15, the staff reviewed Revisions 24 and 25 to the preservice inspection program and concluded that the changes included therein were acceptable. Unit 2 action: Submit Unit 2 PSI program.
7 . 1 . 1	16	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- By letter dated August 21, 1995 for both units, TVA provided additional justification for a deviation from Position C.6(a) of RG 1.118 "Periodic Testing of Electrical Power and Protection Systems" Revision 2. In SSER16, the NRC found the deviation acceptable.
7 . 1 . 3	15	OT	In the SER, NRC indicated that a review of the setpoint methodology would be performed with a review of the Technical Specifications. In SSER4, NRC reviewed the methodology used to determine setpoints for Watts Bar Units 1 and 2 and determined that it was acceptable. By letter dated July 29, 1994, for both units, TVA submitted a topical report titled "Westinghouse Setpoint Methodology for Protection Systems, Watts Bar Units 1 and 2, Eagle 21 Version" (WCAP-12096, Revision 6). In SSER15, the NRC concluded the setpoint methodology was acceptable based on (1) previous acceptance of Westinghouse setpoint methodology at other plants, (2) the similarity between the Watts Bar and previously approved designs such as Sequoyah, and (3) the Watts Bar setpoint methodology is in compliance with RG 1.105 and ISA S6704. Staff requested discussion of methodology for determining, setting, and evaluating as-found setpoints for drift susceptible instruments. Unit 2 action: Resolve this issue using the BFN TS-453 precedent (see NRC ML061680008).
7 . 2 . 1	15	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. In SSER15, the NRC reviewed the WBN Unit 1 EMI/RFI report and concluded that the EMI/RFI issue was resolved for WBN Unit 1. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7 . 2 . 5	14	CI	CONFIRMATORY ISSUE - address IEB 79-21 to alleviate temperature dependence problem associated with measuring SG water level In SSER2, NRC accepted TVA's commitment to insulate the steam generator water level reference legs to alleviate the temperature dependence problem. By letter dated July 27, 1994, TVA submitted an evaluation for both units and determined that it was not necessary to insulate the SG reference legs at WBN. In SSER14, NRC concurred with TVA's assessment to not insulate the steam generator water level instrument reference leg. Unit 2 Action: Update accident calculation.
7 . 2 . 6	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. "CONCLUSIONS" left open until all actions in subsection are closed.
7 . 3 . 0	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.
7 . 3 . 1	14	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. --- In SSER14, NRC reviewed TVA's FSAR amendment 81 section 7.3.2.2.6, with respect to a deviation from IEEE Standard 279-1971. Manual initiation of both steamline isolation and switchover from injection to recirculation following a loss-of-primary-coolant accident are performed at the component level only. In SSER14, NRC agreed with TVA's justification.
7 . 3 . 6	13	O	In SSER13, NRC reviewed the Eagle-21 upgrade for WBN Unit 1 only. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review. "CONCLUSIONS" left open until all actions in subsection are closed.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7 . 4 . 2	7	C	By letter dated September 26, 1985, TVA requested a deviation from 10 CFR Part 50, Appendix R, Section III.L.2.d for use of the SG saturation temperatures to approximate reactor coolant system cold leg temperatures. This was approved for both units by SE dated May 17, 1991. The SE was discussed in SSER7. The staff concluded that this was an acceptable deviation.
7 . 5 . 2	15	CI	OUTSTANDING ISSUE involving RG 1.97 instruments following course of an accident In the original 1982 SER, the staff stated that WBN did not use RG 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plants and Environs Conditions During and Following an Accident," for the design because the design predated the RG. In SSER7, an outstanding issue was opened. TVA provided NRC information on exceptions to RG 1.97. A detailed review was performed for both units (Appendix V of SSER9). The staff concluded that WBN conforms to or has adequately justified deviations from the guidance of RG 1.97, Revision 2. TVA submitted additional deviations for both units in letters dated May 9, 1994, and April 21, 1995. In SSER14 and SSER15, the additional deviations to RG 1.97 were reviewed and accepted by NRC. NUREG-0737, II.F.1.2, ""Accident Monitoring Instrumentation" – Reviewed in SSER9. Unit 2 Actions: Install Noble gas, Iodine / particulate sampling, and Containment High Range Monitors. CI in NRC letter May 28, 2008.
7 . 5 . 4	0	CI	"CONCLUSIONS" left CI until all items in subsection are closed.
7 . 7 . 2	13	C	LICENSE CONDITION – Status monitoring system, Bypassed and Inoperable Status Indication (BISI) In the original 1982 SER, the staff requested TVA address RG 1.47, "Bypassed and Inoperable Status Indications for Nuclear Power Plant Safety Systems." TVA addressed RG 1.47 by letters for both units dated January 29, 1987, and October 22, 1990. In SSER7, the staff documented completion of the review and closed the issue. By letter dated February 18, 1994, for both units, TVA submitted a re-evaluation of BISI that excluded components that would not be rendered inoperable more than once a year in accordance with RG 1.47 position C.3(b). In SSER13, NRC reviewed the revision and concluded that it was acceptable.
7 . 7 . 8	14	CT	ATWS Mitigation design was reviewed and approved for both units by a Safety Evaluation Report issued December 28, 1989. This SER is also in Appendix W of SSER9. Outstanding Issue was Technical Specifications requirements. In SSER14, NRC reviewed the revision of FSAR Figure 7.3-3 for the AMSAC automatic initiation signal to start the turbine driven and motor driven auxiliary feedwater pumps and considered the issue resolved. Unit 2 Action: Address in Technical Specifications as appropriate.
7 . 8 . 1	14	CI	NUREG-0737, II.D.3, "Valve Position Indication" – The design was reviewed in the original 1982 SER and found acceptable pending confirmation of installation of the acoustic monitoring system. In SSER5 (IR 390/84-35), the staff closed the LICENSE CONDITION for Unit 1 only. By letter dated November 7, 1994, for both units, TVA provided a revised response for NUREG-0737 Item II.D.3. TVA revised the design by relocating the accelerometers for valve position indication to downstream of the relief valves. This change was reviewed in SSER14. The revision did not change the function of the position indication hardware and did not alter the previous review. Unit 2 Action: Verify installation of the acoustic monitoring system to PORV to indicate position. CI in NRC May 28, 2008 letter.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
7 . 8 . 4	4	CT	NUREG-0737, II.K.3.10, "Anticipatory Trip At High Power" In SSER4, NRC concluded that TVA had adequately addressed the requirements of NUREG-0737 Item II.K.3.10 for removal of the anticipatory reactor trip on turbine trip at or below 50% power. Unit 2 Action: Unit 2 Technical Specifications and surveillance procedures will address this issue.
7 . 8 . 5	0	C	NUREG-0737, II.K.3.12, "Confirm Existence of Anticipatory Reactor Trip Upon Turbine Trip" Approved for both units in the SER
8 . 2 . 1	13	C	Approved for both units in SER. In SSER13, NRC reviewed TVA's analysis of grid stability on loss of both units. The NRC conclusions in the SER remained valid.
8 . 2 . 2	15	C	8.2.2.1 CONFIRMATORY ISSUE - document additional information in FSAR on control power supplies and distribution system for the Watts Bar Hydro Plant Switchyard In the original 1982 SER, NRC concluded that the offsite power system circuits at the Watts Bar Hydro Plant Switchyard met GDC 17 pending documentation in the FSAR. The information was added to the FSAR. In SSER2, NRC closed the issue. In SSER13, the staff reviewed revised information incorporated into FSAR amendment 71 for both units and concluded that it supported the original conclusion in SSER2. --- 8.2.2.2 OUTSTANDING ISSUE involving compliance of design changes to the offsite power system with GDC 17 and 18. In SSER2 and 3, NRC continued the review of the offsite electrical power system. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the design changes to minimize the probability of losing all AC power, compliance with GDC 17 and minimizing the probability of a two unit trip following a one unit trip. These issues were resolved in SSER13. Additional review was done in SSER14, but the conclusions remained valid. --- 8.2.2.3 Compliance with GDC 17 for the Duration of the Offsite System Contingencies By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC reviewed the load shed scheme described in FSAR amendment 71 that reduces loads from common station service transformers A and B including contingency for both units trip and a 161-kV supply contingency. In SSER15, NRC determined that entering the LCO for one offsite circuit inoperable was appropriate. No open items were identified. --- 8.2.2.4 Minimizing the Probability of a Two-Unit Trip Following a One-Unit Trip By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In FSAR amendment 71, TVA described the transfer of power sources on trip of a unit's main generator. In SSER 13, NRC evaluated the design and determined that the concern was resolved.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 3 . 1	20	OT	8.3 Fifth Diesel Generator

In SSER10, NRC reviewed the design of the fifth diesel generator. In SSER18, NRC accepted TVA's commitment to perform modifications and surveillances including preoperational testing before declaring the fifth diesel generator operable as a replacement for one of the four diesel generators. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.

8.3.1.1: CONFIRMATORY ISSUE - incorporate new design that provides dedicated transformer for each preferred offsite circuit in FSAR

In the original 1982 SER, NRC concluded that the offsite power system with a dedicated transformer for each preferred offsite circuit met GDC 17 pending documentation in the FSAR. The information was added to the FSAR. In SSER2, NRC closed the issue. In SSER13, NRC reviewed additional changes though FSAR amendment 75 and concluded that the design was acceptable.

8.3.1 DG Starting and Control Circuit Logic

In SSER10, NRC reviewed the DG starting and control circuit logic. No open items were identified.

8.3.1.2 Low and Degraded Grid Voltage Condition

In the SER, NRC stated they would verify the adequacy of TVA's analysis regarding Branch Technical Position PSB-1 once preoperational testing was completed. In SSER13, the NRC reviewed information on the load shed and diesel start relays. In SSER14 NRC clarified the requirements. In SSER20, NRC reviewed the preoperational test for Unit 1.

Unit 2 Action: Include the setpoint in the Technical Specifications for the load shed relays and similar minimum limits for the diesel start relays.

8.3.1.6: CONFIRMATORY ISSUE - provide diesel generator reliability qualification test report

In SSER2, NRC indicated that it would verify DG qualification testing. TVA provided a copy of the DG qualification test report. In SSER7, the NRC concluded that the DGs had been satisfactorily tested in accordance with IEEE 387-1977.

8.3.1.6: LICENSE CONDITION (12) - Diesel generator reliability qualification testing at normal operating temperature

In the original 1982 SER, NRC required that the capability of the DGs to start at normal temperature be demonstrated. TVA's August 31, 1983, letter confirmed tests had been performed on a DG identical to those at WBN. In SSER2, NRC closed the issue.

8.3.1.7 Possible Interconnection Between Redundant Divisions Through Normal and Alternate Power to the Battery Charger

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the use of alternate feeders to the battery chargers and inverters and concluded a Technical Specification surveillance for monitoring the position of these supply breakers resolved the item.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION

Unit 2 Action: Include the surveillance requirement in the Technical Specifications.

8.3.1.10 No-load Operation of the Diesel Generator

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the information provided and concluded the issue was resolved. In SSER14, NRC added additional clarification but did not change the conclusions.

8.3.1.11 Test and Inspection of the Vital Power System

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed TVA's plan for test and inspection of the vital ac system and concluded the issue was resolved.

8.3.1.12 The Capability and Independence of Offsite and Onsite Sources When Paralleling During Testing

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the Emergency Diesel Generators response to a loss-of-offsite-power (LOOP). TVA submitted additional information for both units by letters dated February 7, 1994 and June 29, 1994. In SSER14, NRC concluded that the issue was resolved.

8.3.1.13 Use of an Idle Start Switch for Diesel Generators

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, the NRC reviewed the information presented on the local idle start switch and concluded the issue was resolved.

8.3.1.14 Master Fuse List Program

In SSER9, NRC provided a safety evaluation of the Master Fuse List Special Program (SP) for Unit 1 (Appendix U). In SSER 13, NRC referenced the evaluation.

Unit 2 Action: Resolve the SP for WBN Unit 2 with the Unit 1 approach.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 3 . 2	14	C	8.3.2.2: LICENSE CONDITION – DC monitoring and annunciation system In SSER3, the staff determined that some items were omitted from the design of the DG DC monitoring and annunciation system. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC closed the issue. --- 8.3.2.4: CONFIRMATORY ISSUE - include diesel generator design analysis in FSAR In the original 1982 SER, staff indicated the design analysis for demonstrating compliance of the DGs with regulatory requirements and guidelines was acceptable pending incorporation of the analysis in the FSAR. The analysis was incorporated in the FSAR, and the issue closed in SSER2. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.5 Non-safety Loads Powered from the DC Distribution System and Vital Inverters By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.5.1 Transfer of Loads Between Power Supplies Associated with the Same Load Group but Different Units By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC reviewed the information provided. Additional information was requested for both units by letter dated March 28, 1994. TVA responded for both units by letter dated June 29, 1994. In SSER14, NRC indicated that the issue was resolved. --- 8.3.2.7 The Fifth Vital Battery System By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved. --- 8.3.2.8 Reenergizing the Battery Charger from the Onsite Power Sources Versus Automatically Immediately Following a Loss of Offsite Power By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC indicated that the issue was resolved.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
8 . 3 . 3	16	CT	8.3.3.1.1: CONFIRMATORY ISSUE involving submergence of electrical equipment as result of a LOCA In the original 1982 SER and SSER3, staff stated that the design for the automatic deenergizing of loads as a result of a LOCA would be verified as part of the site visit. During the August 1991, visit and in a letter for both units dated September 13, 1991, TVA committed to revise the FSAR. The information was added to the FSAR in amendment 71. In SSER13, NRC closed the issue. --- 8.3.3.1.3 Failure Analysis of Circuits Associated with Cables and Cable Splices Unqualified for Submergence By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER 13, NRC reviewed the submergence calculation and closed the issue. Unit 2 Action: Revise calculation for WBN Unit 2. --- 8.3.3.1.2: CONFIRMATORY ISSUE - verify design for bypass of thermal overload protective device In the original 1982 SER, NRC indicated that the design for bypass of thermal overload protective devices on safety-related motor operated valves would be verified during the electrical drawing review. The staff subsequently reviewed the drawings and closed the issue in SSER2. --- 8.3.3.1.4 Use of Waterproof Splices in Potentially Submersible Sections of Underground Duct Runs By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13 and 14, NRC raised a concern on splice usage in raceways. TVA submitted additional information for both units by letters dated November 18, 1994, and January 5, 1995. In SSER15, NRC found that TVA had adequately justified the acceptability of the installed splices at Watts Bar. --- 8.3.3.1.5 Dow Corning RTV-3140 Used to Repair Damaged Kapton Insulated Conductors In SSER15, NRC reviewed the use of RTV-3140. TVA submitted the technical basis for use in a December 6, 1994, letter for both units. TVA completed additional testing and told the NRC of the limited use of this repair method for both units by letter dated February 10, 1995. In SSER15, NRC found the use of RTV-3140 acceptable for the limited use described. --- 8.3.3.1.6 Cable Damage Near Splices and Terminations In SSER16, NRC reviewed TVA's corrective action plan for Construction Deficiency Report 390/95-02 and found the limited inspections for damaged Class 1E cables to 10 CFR 50.49 installations acceptable. This was a WBN Unit 1 only CDR. --- 8.3.3.2: CONFIRMATORY ISSUE - revise FSAR to reflect requirements of shared safety systems In the original 1982 SER, the staff stated that the description and analysis of shared onsite AC and DC systems was under review but was acceptable pending revision of the FSAR.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION

In SSER3, the confirmatory issue was left open to track additional information to be incorporated in the FSAR. In a letter dated September 13, 1991, TVA provided the additional information. In SSER13, NRC closed the issue. In SSER14, NRC added additional clarification.

8.3.3.2.2 Sharing of AC Distribution Systems and Standby Power Supplies Between Units 1 and 2

In the SER and SSER3, NRC reviewed the design to the guidelines of RG 1.81 and determined it was acceptable pending revision to the FSAR. NRC noted discrepancies in the FSAR. By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. In SSER13, NRC closed the issue.

8.3.3.2.3: CONFIRMATORY ISSUE for design of sharing raceway systems between units

In the original SER, NRC indicated that the design for sharing of raceway systems between units would be verified during the electrical drawing review. The staff confirmed that cable routing was in accordance with accepted separation criteria and closed the issue in SSER2.

8.3.3.2.4: LICENSE CONDITION – Possible sharing of DC control power to AC switchgear

In the original 1982 SER, staff required that all possible interconnections between redundant divisions through normal and alternate power sources to various loads be identified in the FSAR. TVA letter dated January 17, 1984, provided the information. NRC closed the issue in SSER3.

8.3.3.3: LICENSE CONDITION – Testing of associated circuits

In the original 1982 SER, staff required that protective devices used to isolate non-Class 1E from Class 1E circuits be of high quality commensurate with their importance to safety and be periodically tested. TVA letter dated January 17, 1984, provided the information. NRC closed the issue in SSER3.

8.3.3.3: LICENSE CONDITION – Testing of non-class 1E cables

In the original 1982 SER, staff required that protective devices used to isolate non-Class 1E from Class 1E circuits be of high quality commensurate with their importance to safety and be periodically tested. TVA letter dated January 17, 1984, provided additional information. NRC closed the issue in SSER3.

8.3.3.3 Physical Independence (Compliance with GDC 17)

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. The information was incorporated into the FSAR by amendment 71. Surveillance requirements for the testing of protective devices used to protect Class 1E circuits from failure of non-Class 1E circuits were incorporated into the Technical Requirements Manual (TRM). This issue was closed based on review of the TRM in SSER 13.

Unit 2 Action: Incorporate testing requirements into the Unit 2 TRM.

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8.3.3.3 Physical Independence (Compliance with GDC 17)

In SSER13, NRC cited differences between RG 1.75 and the WBN design criteria (WB-DC-30-4). In SSER14, NRC continued the review. NRC requested additional information for both WBN units by letter dated March 28, 1994. TVA responded for both WBN units by letters dated July 29, 1994, January 11, 1995, and June 5, 1995. In SSER16, NRC found separation between open cable trays (including cables in free air) adequate.

8.3.3.5.1 Compliance with Regulatory Guides 1.108 and 1.118

In SSERs 13, 14 and 15, NRC reviewed WBN compliance with RGs 1.108 and 1.118. In SSER13, NRC reviewed WBN's use of temporary jumper wires when portable test equipment is used during testing. The justification was documented in the FSAR. In SSER14 and 15, NRC reviewed Class 1E standby power system testing, testing DG full load rejection capability and non-class 1E circuitry for transmitting signals needed for starting DGs. NRC concluded that the features were appropriately tested.

8.3.3.5.2: CONFIRMATORY ISSUE - incorporate commitment to test only one of four diesel generators at one time

In the original 1982 SER, the NRC found the commitment to test DGs one at a time acceptable pending its incorporation into the FSAR. In SSER2, NRC reviewed the documentation and closed the issue.

8.3.3.5.3 Time Constraints for Stability of EDG During No-Load Startup Testing

In SSER16, NRC reviewed and approved changes to the no load emergency diesel generator testing surveillance requirements.

Unit 2 Action: Incorporate into WBN Unit 2 TS surveillances.

8.3.3.6: CONFIRMATORY ISSUE involving evaluation of penetrations' ability to withstand failure of overcurrent protection device

In the original 1982 SER, staff required a reevaluation of the penetrations' capability to withstand, without seal failure, the total range of available time-current characteristics assuming a single failure of any overcurrent protective device. In SSER3, staff found the results of the evaluation acceptable pending the information being incorporated in the FSAR. The staff reviewed the FSAR and closed the issue for both units in SSER7.

8.3.3.6: LICENSE CONDITION – Testing of reactor coolant pump breakers

In the original 1982 SER, staff required that the redundant fault current protective devices for the reactor coolant pump circuits meet RG 1.63. In SSER2, staff reviewed the design and concluded it met RG 1.63.

8.3.3.6 Compliance with GDC 50

By letter dated June 20, 1991, for both units, NRC requested additional information on Section 8 of the FSAR. TVA responded for both units by letter dated September 13, 1991. The information was incorporated into the FSAR in amendment 70. In SSER13, NRC indicated that the issue was resolved.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 0 . 0	10	C	In SSER10, the staff completed its review of the additional DG building and that review is documented in Sections 9.2.1, 9.4.5, 9.5, 9.5.1, 9.5.4, 9.5.6, 9.5.7 and 9.5.8 of SSER10.
9 . 1 . 0	5	C	In response to TVA letters requesting relief from the requirement of 10 CFR 70.24 to have a criticality monitor installed in the fuel storage area until irradiated fuel is placed in the area, the staff granted an exemption from the requirement in SSER5.
9 . 1 . 2	16	C	In SSER5, the staff acknowledged notification by TVA of a contract with DOE for DOE to accept spent fuel from WB and stated that they had no more concerns about this issue. In SSER15, the staff reviewed TVA's proposed resolution of the Boraflex degradation issue and found it acceptable. In SSER16, the staff reviewed changes in design basis with respect to placement of fuel assembly, and structural aspects of rack fabrication deficiencies, considering that TVA planned to replace the racks by the first scheduled refueling outage. The staff noted that the replacement racks have approximately the same capacity as the original WB racks. The staff concluded that the proposed changes were acceptable provided that no single rack load exceeded 80% of its original capacity.
9 . 1 . 3	15	C	In SSER11, the staff reviewed TVA's revised commitment regarding testing of spent fuel pool cooling pumps and found it acceptable. As a result of a submittal filed as a petition pursuant to 10 CFR 2.206 regarding spent fuel storage safety issues, the staff reevaluated the spent fuel cooling capability at WB considering the identified issues and concluded that the spent fuel cooling system satisfied the requirements of GDC 44 with regard to transferring heat from the spent fuel to an ultimate heat sink under normal operating and accident conditions in SSER15.
9 . 1 . 4	13	OV	LICENSE CONDITION – Control of heavy loads (NUREG-0612) The staff noted in SSER3 that they were reviewing TVA's submittals regarding NUREG-0612 and concluded in SSER13 that the license condition was no longer necessary based on their review of TVA's response to NUREG-0612 guidelines for Phase I in TVA letter dated July 28, 1993. Unit 2 Action: Implement NEI guidance on heavy loads.
9 . 2 . 1	18	O	In SSER9, the staff noted that Amendment 65 indicated that ERCW provided cooling to the instrument room chillers, instead of room coolers and stated that conclusions in the SER and supplements were still valid. In SSER10, the staff reviewed discrepancies between FSAR figures pertaining to the raw cooling water system and its valving and TVA's clarification of these discrepancies, and considered them resolved. In SSER18, the staff concluded that ERCW does not conform to GDC 5 for two-unit operation. Unit 2 Action: Appropriate measures will be taken to ensure that the ERCW system is fully capable of meeting design requirements for two unit operation.
9 . 2 . 2	5	CI	CONFIRMATORY ISSUE - relocate component cooling thermal barrier booster pumps above probable maximum flood (PMF) level before receipt of an OL TVA committed to relocate the pumps above PMF level and the staff found this acceptable. Implementation for this issue was resolved for Unit 1 in SSER5 when the staff verified in IR 390/84-20 that the pumps had been relocated. Additionally, IR 390/83-06 and 391/83-05 verified that the 4 booster pumps had been relocated and the construction deficiency reports identifying this issue for both units were closed. Unit 2 Action: Verify relocation of pumps for Unit 2.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 2 . 4	9	C	In SSER9, the staff noted that potable water requirements were incorrectly stated in the SER, but this change did not affect the conclusions reached in the SER.
9 . 2 . 6	12	C	In SSER12, the staff noted that FSAR Amendment 72 revised the reserved amount of condensate for each units auxiliary feedwater system from 2000,000 gallons to 210,000 gallons and that this did not change the conclusions reached in the SER or supplements.
9 . 3 . 2	16	CT	LICENSE CONDITION – Post-Accident Sampling System In SSER3, the staff identified the criteria from Item II.B.3 in NUREG-0737 that were unresolved in the SER and reviewed TVA responses for these items. The staff stated that the post-accident sampling system met all of the criteria and was acceptable. They also stated that the proposed procedure for estimating the degree of reactor core damage was acceptable on an interim basis and that TVA would be required to provide a final procedure for estimating the degree of core damage before start-up following the first refueling outage. In SSER5, the staff stated that due to the 5 year delay in WB licensing, TVA should commit to submitting the procedure at an earlier date. TVA submitted a final procedure for estimating degree of core damage by letter dated June 10, 1994, and the license condition was deleted in SSER14. In SSER16, the staff reviewed TVA's revised emergency plan implementing procedure governing the use of the methodology provided in the June 10, 1994, submittal, and other plant data, for addressing degree of reactor core damage and found the methodology and implementing procedure acceptable. Unit 2 Action: Eliminate requirement for Post-Accident Sampling System in Technical Specifications (Identified as CT in NRC letter dated May 28, 2008).
9 . 4 . 1	9	C	In SSER9, the staff clarified control room isolation after activation of SI signal from either unit, or upon detection of high radiation or smoke concentration in outside air supply stream and stated that conclusions reached in SER and supplements were still valid.
9 . 4 . 5	19	C	In SSER9, the staff reviewed the design of the additional DG building ventilation system (FSAR Amendment 66 submittal dated May 20, 1991, for both units) and determined that conclusion reached in SER was still valid and design was acceptable. In SSER10, the staff had concerns regarding periodic testing of the ventilation system for the additional DG building; muffler room exhaust fan failure or exhaust blockage; missile protection for the muffler fan exhaust structure; and potential for blockage and turbine missile damage of air intake structures. These were all resolved in SSER10, with the exception of the potential for external blockage of the air intake structure by missile impact. In SSER11 the staff found TVA's response and procedural change to address potential blockage of the air intake structure by missile impact acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service. In SSER14, the staff clarified statements made in the SER by stating that none of the ventilation systems for the ERCW pumping station was safety related, but the failure of both mechanical equipment room ventilation fans would not prevent operation of any safety related equipment. Thus, the conclusions reached in the SER were still valid, and the systems were still acceptable. In SSER16, the staff reviewed design changes to the DG building ventilation system, since the original design was reviewed, and concluded that the judgments made in the SER and supplements did not change and the system was still acceptable. In SSER19, the staff clarified their statements about the diesel engine room exhaust fans, stating that since the fans automatically start when the DG starts, DG testing results in operation of the diesel engine room exhaust fans.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 5 . 0	10	C	In SSER10, the staff reviewed 55 questions previously asked concerning the 4 original DGs for applicability to the additional DG and additional responses from TVA and had no concerns.
9 . 5 . 1	19	C	9.5.1.2: OUTSTANDING ISSUE for Fire Protection Program 9.5.1.3: CONFIRMATORY ISSUE – Electrical penetrations documentation 9.5.1.3: LICENSE CONDITION – Fire protection program In SSER10, the staff noted that the fire hazard analysis for the additional DG building would be included in the WB Fire Protection report. The staff reviewed the building design for compliance with BTP 9.5-1, Appendix A and found it in conformance with the BTP. They also asked TVA to verify that the fire fighting systems installed in the DG building meet GDC 3 and stated that TVA's response satisfied their concerns. In SSER18, the staff concluded that the Fire Protection program for Watts Bar conformed to the requirements of 10 CFR 50.48 and was acceptable except for the fire barrier seal program and emergency lighting inside the Reactor Building. Additionally, the staff considered the confirmatory issue involving electrical penetration documentation resolved in SSER18 on the basis of the safety evaluation of the revised Fire Protection program included in Appendix FF of SSER18. In Appendix FF of SSER19, a safety evaluation of the Fire Protection program contains a detailed evaluation of fire barrier penetration seals. The staff concluded that TVA's penetration seal program adequately demonstrates the fire resistive rating of the penetrations, and that they conform to the guidelines of Positions D.1.j and D.3.d of Appendix A to BTP 9.5.1 and were acceptable. The safety evaluation also includes TVA's revised position on emergency lighting, which was found to be acceptable.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 5 . 4	12	C	9.5.4.1: CONFIRMATORY ISSUE - include required language in operating instruction to ensure no-load and low-load operation is minimized and revise operating procedures to address increased diesel generator load after it has run for an extended period of time at low or no load In SSER5, the staff verified that plant operating procedures had been revised to incorporate requirements that ensure that operational no-load and low-load conditions will not harm the diesel generators. --- 9.5.4.1: LICENSE CONDITION – Diesel Generator reliability The staff verified that the modifications necessary to comply with NUREG/CR-0660 had been completed and, as stated above, requirements had been incorporated into operating procedures. Thus, this license condition was resolved in SSER5. --- 9.5.4.1: OUTSTANDING ISSUE for staff to complete review to determine if diesel generator auxiliary support systems can perform their design safety functions under all conditions, after receipt of all requested information. In SSER5, the staff resolved the issue of the completeness of its review of the emergency diesel engine lubrication oil system. --- 9.5.4.1: OUTSTANDING ISSUE to design skid-mounted piping and components from the day tank to the diesel engine as seismic Category I and to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, as provided in TVA letters dated February 15, 1985, March 18, 1985, and August 30, 1985, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. They stated that this resolution applied to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems (9.5.4.2, 9.5.5, 9.5.6, 9.5.7 and 9.5.8). --- 9.5.4.2: CONFIRMATORY ISSUE - provide missile protection for fuel oil storage tank vent lines The staff found TVA's commitment to provide missile protection for the fuel oil storage tank vent lines acceptable and verified that the protection had been installed and considered this issue resolved in SSER5. --- In SSER9, the staff stated that the conclusions reached in the SER, SSER3 and SSER5 regarding the EDG auxiliary supports systems applied to the additional EDG. This conclusion applied to sections 9.5.5, 9.5.6, 9.5.7 and 9.5.8, as well. In SSER10, the staff questioned tornado missile protection and seismic requirements for the additional DG fuel oil storage tank fill lines and found TVA's response acceptable. The staff questioned the difference between the design of the fuel oil transfer pump for the additional DG and the design of the DG building storage pumps, and found TVA's explanation and proposed clarification to the FSAR acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service. In SSER11, the staff noted the revised capacity of the 7-day fuel oil storage tank identified in FSAR Amendment 69 and stated that it still exceeded the amount needed for a 7-day supply and, therefore, did not affect the staff's conclusions reached in the SER or supplements.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
			In SSER12, the staff determined that the fire watch required when routing a hose from a fuel oil delivery vehicle to the DG tank manway openings in the DG building was no longer required based on TVA actions in response to other fire protection requirements.
9.5.5	11	C	OUTSTANDING ISSUE to design engine cooling water system piping and components for all engines up to the engine interface, including auxiliary skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER5, the staff also resolved concerns regarding ambient DG room temperature and its impact on pre-heating DG units, the time period the DG is capable of operating fully loaded without secondary cooling, and the possibility of the cooling water system becoming air bound due to the expansion tank location. In SSER11, the staff noted that FSAR Amendment 70 stated that coolant temperature would be maintained between 125 and 155 degrees F, not the 115 and 125 stated in the SER. They stated that this clarification did not alter the staff's conclusions previously reached in the SER or its supplements.
9.5.6	10	C	OUTSTANDING ISSUE to design engine air-starting system piping components for all engines up to the engine interface, including auxiliary skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff questioned protection of the additional DG electrical starting system components from water spray, and whether diesel engine control functions supplied by the air starting system could interfere with the engines' ability to perform its safety function once it has started. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
9 . 5 . 7	10	C	OUTSTANDING ISSUE to perform additional modification, or provide justification for acceptability of proposed modification, to ensure lubrication of all wearing parts of the diesel engine either on an interim or continuous basis and to provide a more detailed description of the lubricating oil system and a description of the diesel engine crankcase explosion protection features In response to a staff concern regarding dry diesel engine starting, TVA proposed using the manufacturers' modification and provided justification for its ability to ensure lubrication of all parts of the diesel engine. The staff found this acceptable in SSER3. TVA submittal of March 18, 1985, responded to a staff request to describe the features that protect the diesel engine crankcase from exploding. In SSER5, on the basis of this submittal, the staff concluded that the emergency diesel engine lubrication oil system can perform its safety function and is acceptable. This issue was resolved. --- OUTSTANDING ISSUE to design standby diesel engine lube oil system piping and components up to the engine interface, including skid mounted piping, to ASME Section III, Class 3 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff questioned the ability to replenish the additional DG lube oil system without interrupting operation of the DG and found TVA's provision to replenish lube oil acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.
9 . 5 . 8	10	C	OUTSTANDING ISSUE to design standby diesel engine combustion air intake and exhaust system piping and components up to the engine interface to ASME Section III, Class 3 and recommendations of RG 1.26 The staff reviewed standards to which emergency diesel engine skid mounted auxiliary system piping and associated components were designed, as well as the testing and inspections to be performed on these systems, and concluded that they were acceptable in SSER5. The staff considered this issue resolved. This resolution applies to the fuel oil, cooling water, air starting, lubrication, and combustion air intake and exhaust systems. --- In SSER10, the staff expressed a concern regarding products of combustion from a fire in the air intake/muffler room, or from the DG exhaust gases, impacting the additional DG or the other DGs. TVA's response addressed the concern. The staff also questioned inspection, surveillance and testing of the DG exhaust system and found the system design adequate to address their concern. In addition, the staff questioned pressure losses through the DG air intake and exhaust systems and determined that their designs were acceptable. TVA stated in a submittal dated July 28, 1993, that they did not plan to place the additional diesel generator in service.
10 . 2 . 0	5	C	In SSER5, the staff agreed that the interval between periodic turbine valve testing could be increased for WB from weekly to monthly.
10 . 2 . 1	12	C	In SSER12, the staff reviewed the revised description of the 3 independent overspeed turbine trip systems, consistent with FSAR Amendment 77, and stated that this review did not alter the conclusions reached in the SER and the system remained acceptable.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
10 . 3 . 1	19	C	In SSER12, the staff described changes to the MSIV closing signals as a result of changes to the Eagle-21 process protection system. They stated that the conclusions reached in the SER were still valid and the main steam system remained acceptable. In SSER19, the staff evaluated a revision in FSAR Amendment 91 to the closure time of the MSIVs from 5 seconds after receiving a closure signal to 6 seconds and concluded it was acceptable.
10 . 4 . 1	9	C	In SSER9, the staff clarified the description of the main condenser and stated that this clarification did not affect the conclusion reached in the SER.
10 . 4 . 4	5	C	In SSER5, the staff concluded that periodic stroking of the turbine bypass system valves may be performed according to plant operating procedures and no Technical Specification was necessary to ensure this testing.
10 . 4 . 7	14	C	In SSER14, the staff evaluated changes that TVA made in Amendment 82 to the FSAR adding a new feedwater isolation signal and clarifying the isolation signal generated by a reactor trip, and stated that the revisions did not affect the conclusions reached in the SER. The staff also corrected an unrelated error they made in the SER regarding the time for the main feedwater regulation valves to close after receipt of a feedwater isolation signal and stated that the conclusions reached in the SER remained valid.
10 . 4 . 9	14	C	In SSER14, the staff discussed reductions in auxiliary feedwater pump design-basis flow rates and new minimum flow requirements. They reviewed TVA's reanalysis of design-basis events and concluded that the revised flow rates were acceptable and the conclusions reached in the SER remained valid.
11 . 1 . 0	16	OV	This item remains open pending closure of 11.4.0 and 11.5.0
11 . 2 . 0	16	C	In SSER 4, the staff evaluated the revised description contained in FSAR Revision 49 and 54 and determined that the conclusions reached in the original SER were not affected by the revisions. In SSER 16, the staff superseded its previous review of the liquid waste management system. The staff concluded that TVA had submitted sufficient design information for both Units 1 and 2 liquid waste management system in accordance with 10 CFR 50.34a requirements and that the LWMS for Watts Bar Units 1 and 2 met the acceptance criteria of SRP Section 11.2 and was, therefore, acceptable.
11 . 3 . 0	16	C	In the SER, the staff identified that the hydrogen and oxygen monitoring system did not meet the acceptance criteria because redundant monitors had not been provided and because the system was not designed to automatically initiate action to mitigate the potential for explosion in the event of high oxygen content. This issue was addressed by Technical Specifications discussed in the original SER and in SSER 8 but was later resolved in SSER 16. Based upon NRC review of TVA's February 17, 1995, letter (submitted on both dockets), the staff accepted the WBN's system approach of preclusive of gas buildup, as allowed by SRP Section 11.3 guidelines, if TVA submitted an administrative program to satisfy administrative controls for TS 5.7.2.15, "Explosive Gas and Storage Tank Radioactivity Monitoring Program." As stated in TVA's letter dated July 21, 1995, the program would provide for monitoring and control of potential explosive mixtures, limit the concentration of oxygen, and surveillance to ensure that the limits are not exceeded. As a result of an SSER 16 review, the staff concluded that the GWMS for Watts Bar Units 1 and 2 met the acceptance criteria of SRP Section 11.3 and was acceptable.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 4 . 0	16	OV	On the basis of its review in SSER 16, the staff found the process control program for Watts Bar acceptable and concluded that the solid waste management system for Watts Bar Unit 1 conformed to the acceptance criteria of SRP Section 11.4 and was, therefore, acceptable. Unit 2 Action: Provide system description and information on QA provisions for Unit 2 Solid Waste Management System and information on the Process Control Program.
11 . 5 . 0	20	OV	In SSER 16, the staff updated its review to Amendment 89, and TVA's submittal dated February 17, 1995. The staff concluded that the process and effluent radiological monitoring and sampling system for Watts Bar Unit 1 complied with 10 CFR 20.1302 and GDCs 60, 63, and 64. The staff also concluded that the system design conformed to the guidelines of NUREG-0737, RGs 1.21 and 4.15, and applicable guidelines of RG 1.97 (Rev. 2). Thus, the system met the acceptance criteria of SRP Section 11.5 and was, therefore, acceptable. In SSER 20, the staff agreed that TVA did not commit to RG-4.15, Revision 1 as reflected in TVA's July 21, 1995 letter. In that letter, TVA had stated that the radiation monitoring system generally agrees with and satisfies the intent of the RG 4.15 except for specific calibration techniques and frequencies. The staff then reiterated its earlier finding stated in SSER 16, Section 11.5.1, that the radiation monitoring system for Watts Bar Unit 1 meets the intent and purpose of RG 4.15, with respect to quality assurance provisions for the system. The staff modified one sentence from SSER 16 and then concluded by stating that the other conclusions given in SSER16 continued to be valid. Unit 2 Action: Provide system description and information on QA provisions for the Unit 2 Radiation Monitoring System
11 . 6 . 0	16	C	In SSER 8, the staff reviewed the preoperational REMP program provided by letter dated June 14, 1991 (submitted for both dockets) The staff concluded in SSER Section 1.6.1, "Offsite Radiological Monitoring Program," that the Watts Bar preoperational REMP as proposed was adequate to provide baseline data which will assist in verifying radioactivity concentrations and related public exposures during plant operation, and was therefore acceptable. The staff provided a safety evaluation for both units via a September 10, 1991 letter. In SSER 16, the staff superseded previous evaluations provided in this section by Sections 11.1 through 11.5 of this supplement, except for the material in Section 11.6.1 of SSER 8, which was unaffected by supplement 16.
11 . 7 . 0	0	OT	This item will remain open pending resolution of Item 11.7.2.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 7 . 1	6	CI	LICENSE CONDITION (6a) - Accident monitoring instrumentation II.F.1 – Noble Gas monitor In SSER 5, TVA submitted letter dated April 26, 1985, on the Unit 1 docket which stated that the Unit 2 shield building vent monitor could not be installed by the time Unit 1 fuel load was scheduled in 1985 because of procurement problems. Since the 1985 fuel load was delayed, TVA subsequently committed in letter dated October 11, 1990, that this monitor and its sampler would be operational before fuel was loaded in Unit 1. This commitment eliminated the staff's concern and resolved the proposed License Condition 6a. Also, in SSER 5, TVA letter dated November 8, 1983 (submitted on both Unit 1 and Unit 2 dockets) requested an exception to the requirement to monitor pressurized-water reactor steam safety valve discharge and atmospheric steam dump valve discharge to be monitored by high-range noble gas effluent monitors by stating that adequate instrumentation was provided to detect a steam generator tube rupture. The staff disagreed with this approach which resulted in TVA subsequently committing in a letter dated October 11, 1990 (submitted on both dockets) that the required high range noble gas effluent monitor would be operational before fuel load. This commitment resolved the staff's concern and eliminated the need for License Condition 6a. --- LICENSE CONDITION (6b) - Accident monitoring instrumentation II.F.1 – Iodine particulate sampling See 7.5.2. In addition, in SSER 5, by letter dated April 26, 1985, submitted on the Unit 1 docket, TVA committed to have the capability for continuous collection in place (i.e., procedures and any minor system modifications necessary) before exceeding 5-percent power. The staff evaluated this commitment and found it acceptable. Since 1985 licensing of Watts Bar was delayed, TVA subsequently committed via letter dated January 3, 1991, as discussed in SSER 6 that the procedural revision and upgrade of the radiation monitors would be done by Unit 1 fuel load. Thus License Condition 6b was resolved in SSER 6. In SSER 6, TVA via letter dated January 3, 1991, committed to have the procedural revision and upgrade of the radiation monitors by fuel load. This commitment ensured the plant would have the capability for continuous collection of post accident gaseous effluents by fuel load. --- In SSER 5, the staff noted that the WBN design did not include a high-range noble gas effluent monitor as described in NUREG-0737, Item II.F.1, Attachment 1, for the auxiliary building vent because the release is diverted to the shield building vent for design-basis accidents. A low-range to high-range radiation monitor is provided in the shield building ventilation stack. By letter dated November 22, 1983, TVA requested an exception to NUREG-0737, Item II.F.1, concerning the installation of high-range noble gas monitors on the auxiliary building vent at Watts Bar. TVA provided the staff additional information at a meeting on December 20, 1983, and subsequently in a submittal dated January 24, 1984. The staff concluded that the auxiliary building vent was not considered to be a potential accident release pathway and, therefore, the Watts Bar Nuclear Plant design, as described above, does not need to be changed to provide for the addition of a high-range noble gas effluent monitor, as described in NUREG-0737, Item II.F.1, Attachment 1, for the auxiliary building vent. The above items were identified as CI by NRC in May 28, 2008 letter.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
11 . 7 . 2	16	OT	NUREG-0737, III.D.1.1, "Primary Coolant Outside Containment" - Resolved for Unit 1 only in SSER10; reviewed in Appendix EE of SSER16. Unit 2 Actions: Include the waste gas disposal system in the leakage reduction program and incorporate in Unit 2 Technical Specifications. --- In SSER 5, TVA by letter dated October 4, 1984, submitted a justification for excluding the waste gas system from the leak reduction program under NUREG-0737, Item III.D.1.1. The staff has evaluated the TVA's submittal and found that sufficient information had not been submitted to provide assurance that significant quantities of radioactive materials would not enter the waste gas system in the event of an accident. On this basis, the staff concluded that the leakage reduction program was acceptable if the following systems were to be included leakage reduction program: (1) residual heat removal, (2) containment spray, (3) safety injection, (4) chemical and volume control, (5) sampling, and (6) waste gas. The staff proposed License Condition 24 and would be resolved if TVA accepted the change as stated above. In SSER 6, the staff reviewed TVA's letter dated March 27, 1986, and agreed that TVA had justified excluding the WGDS from the program. In SSER 10, the staff resolved Condition 24, when upon review of TVA letter dated August 27, 1992, they noted that WGDS specification was included in the draft TS Section 5.7.2.
12 . 1 . 0	14	C	In SSER 10, the staff updated its evaluation based upon review of FSAR Amendments 65 through 71 and TVA letter dated January 3, 1991 submitted on U1 docket only. The staff acknowledged that TVA would soon revise FSAR again due to reflect recent changes to 10 CFR Part 20. In SSER 14, the staff reviewed the revised FSAR to reflect the 10 CFR Part 20 changes. Details of the staff's review are delineated in the sections that follow .
12 . 2 . 0	14	C	In SSER 14, the staff reviewed the revised FSAR discussion of ALARA design and operational considerations in this section that were made to clarify that the total effective dose equivalent for each individual would be maintained ALARA. As revised, FSAR Section 12.1 was consistent with the requirements in 10 CFR 20.1101 and 20.1702 and was, therefore, acceptable to the staff.
12 . 3 . 0	14	C	In SSER 14, the staff reviewed the revised FSAR descriptions of the radioactive sources expected to result from normal plant operations, anticipated operational occurrences, and accident conditions. The staff concluded that the descriptions of plant radioactive sources, as revised, conformed to the acceptance criteria in SRP Section 12.2 and were, therefore, acceptable to the staff.

*** = See last page for status code definition.**

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
12 . 4 . 0	18	C	In SSER 10, the staff reviewed revised operational test frequency of area radiation monitors from monthly to quarterly and found that TVA's program met the provisions of 10 CFR 20.1601(c) and the acceptance criteria in SRP Section 12.3 and was, therefore, acceptable. In SSER 14, the staff reviewed FSAR Amendment 84 in light of the revised requirements of 10 CFR Part 20. The staff found these sections, as amended, complied with the acceptance criteria in the SRP and was acceptable to the staff. In addition, the staff reviewed revised FSAR Section which specified the radiation dose rate design criteria for the placement and configuration of plant system valves This section as amended was consistent with the staff's conclusion that Watts Bar can be operated within the dose limits and that radiation doses can be maintained ALARA. Therefore, these changes were acceptable to the staff. In SSER 18, the staff reviewed FSAR Amendments 89 and 90 in which TVA had revised the discussions of the installed area radiation monitoring and the fixed airborne radiation monitoring systems. In addition, Amendment 90 revised the estimated maximum radiation dose rates depicted on the radiation zone maps for several areas in the plant. The staff also reviewed FSAR text changes that clarified the distinctions between a monitor calibration, a monitor channel operational test, and a check source functional test and deleted discussions of fixed airborne radiation monitors in the Unit 2 hot sample room and the Unit 1 control room and were replaced with portable continuous air monitors (CAMs). The staff found this acceptable since it did not change the staff's conclusion documented in SSER 14.
12 . 5 . 0	14	C	In SSER 14, the staff reviewed FSAR Amendment 88 which revised the discussion of the estimate of personnel internal exposures to address the new 10 CFR Part 20 requirements. The staff concluded that this section as amended provided reasonable assurance that the requirements of 10 CFR 20.1502 and 20.1703 would be met. In addition, the staff reviewed FSAR Amendment 84 which updated the predicted maximum annual doses resulting from plan operation and determined that this section as amended provides reasonable assurance that the radiation doses resulting from plant operations would not exceed the limits in 10 CFR 20.1301.
12 . 7 . 1	16	CI	NUREG-0737, II.B.2, "Plant Shielding" - NRC reviewed in Appendix EE of SSER16. In SSER 14, the staff reviewed FSAR Amendment 88 which revised the discussion of shielding for accident conditions. The staff stated that this change did not affect the staff's previous conclusion that Watts Bar conformed to the positions in NUREG-0737 Item II.B.2, and was therefore, acceptable to the staff. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Complete Design Review of EQ of equipment for spaces/systems which may be used in post accident operations. CI in NRC May 28, 2008 letter.
12 . 7 . 2	5	CI	NUREG-0737, II.F.1.2.C., "Accident Monitoring Instrumentation" - In SSER5, the staff resolved this license condition for Unit 1 (IR 390/84-09 & IR 390/84-28) due to verification that TVA's commitments regarding the high range in-containment monitor were satisfactory and that it was installed. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Install high range in-containment monitor for Unit 2. CI in NRC May 28, 2008 letter.
12 . 7 . 3	16	CI	NUREG-0737, III.D.3.3, "In-plant Monitoring of I2 radiation monitoring" - NRC reviewed in Appendix EE of SSER16. Identified as CI in NRC letter dated May 28, 2008. Unit 2 Action: Complete modifications for Unit 2. CI in NRC May 28, 2008 letter.
13 . 1 . 0	16	C	In SSER16, NRC reviewed the organizational information presented in TVA Topical Report TVA-NPOD89. NRC approval of the topical report and its revisions superseded the staff review in the SER.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
13 . 1 . 3	8	O	LICENSE CONDITION – Use of experienced personnel during startup In the original 1982 SER, NRC provided a LICENSE CONDITION to ensure TVA augmented the shift staff with individuals that had prior experience with large pressurized water reactor operations. In SSER 8, NRC reviewed TVA's commitment in the FSAR and the Nuclear Quality Assurance Plan to comply with RG 1.8, "Personnel Selection and Training,". NRC staff considered that this provided adequate assurance, and eliminated the LICENSE CONDITION. Unit 2 Action: Submit staffing and NQAP for two unit operation.
13 . 2 . 1	10	C	In SSER9, NRC reviewed TVA's certification for licensed operator training programs and FSAR Chapter 13 revision to reflect the training program . NRC determined that these were acceptable. In SSER10, NRC reviewed changes to the initial test program for TMI Item I.G.1, "Training During Low Power Testing." NRC found the training requirement satisfied.
13 . 3 . 0	13	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 3 . 1	20	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. In SSER20, NRC completed the review including the findings of the Federal Emergency Management Agency. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 3 . 2	20	O	In SSER 13, NRC reviewed the Watts Bar Nuclear Plant Radiological Emergency Plan submitted February 12, 1993. This review superseded the review in the SER. In SSER13, the staff concluded that the WBN Radiological Emergency Plan (REP) provided an adequate planning basis for an acceptable state of onsite emergency preparedness. In SSER 20, NRC completed the review and found that the REP complied with NRC requirements and was acceptable for the full-power license of WBN Unit 1. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 3 . 3	20	O	LICENSE CONDITION – Emergency Preparedness (NUREG-0737, III.A.1, III.A.2, III.A.2) The NRC review of Emergency Preparedness in SSER13 superseded the review in the original 1982 SER. In SSER13, the staff concluded that the WBN Radiological Emergency Plan (REP) provided an adequate planning basis for an acceptable state of onsite emergency preparedness, and the LICENSE CONDITION was deleted. In SSER 20, NRC completed the review and found that the REP complied with NRC requirements and was acceptable for the full-power license of WBN Unit 1. Unit 2 Action: Submit WBN REP for two unit operation.
13 . 4 . 0	8	OV	LICENSE CONDITION - Independent Safety Engineering Group (ISEG) (NUREG-0737, I.B.1.2) In SSER 8, NRC indicated that the ISEG would be established as part of the Technical Specifications. Resolved for Unit 1 only in SSER8. Unit 2 action: Implement the alternate ISEG that was approved for the rest of the TVA units including WBN Unit 1 by NRC on August 26, 1999. The function will be performed by the site engineering organizations.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
13 . 5 . 2	10	CI	OUTSTANDING ISSUE involving operating, maintenance and emergency procedures In the original 1982 SER, this issue was used to track the staff's review of the emergency operating procedures generation package. In SSER9, the staff concluded that the outstanding issue was no longer needed as the staff no longer performed such reviews. The emergency operating procedure development program review is performed under IP 42000, "Emergency Operating Procedures." This inspection will be performed before issuance of an operating license. In SSER10, NRC reviewed TVA's plan for vendor review of the power ascension test procedures and the Emergency Operating Instructions (EOIs). Based on the Watts Bar plant specific simulator, NRC determined that a License Condition to ensure consistency with the Sequoyah EOIs was no longer necessary. Unit 2 Action: Issue operating, maintenance and emergency procedures.
13 . 5 . 3	16	CT	LICENSE CONDITION – Report on outage of emergency core cooling system (NUREG-0737, II.K.3.17) In the original 1982 SER, the NRC accepted TVA's commitment to develop and implement a plan to collect emergency core cooling system outage information. In SSER3, the staff accepted a revised commitment from an October 28, 1983, letter to participate in the nuclear power reliability data system and comply with the requirements of 10 CFR 50.73. --- Reporting of Safety Valve and Relief Valve Failures and Challenges (II.K.3.3) In SSER 16, NRC reviewed TVA revised commitment to report failures and challenges to PORVs and safety valves in accordance with the Technical Specifications. Unit 2 Action: Include, as necessary, in the Technical Specifications. CT in NRC May 28, 2008 letter.
13 . 6 . 0	20	C	OUTSTANDING ISSUE to file appropriate revision to the Physical Security Plan In the original 1982 SER, the staff identified certain outstanding issues with TVA's Physical Security Plan. In SSER 1 NRC evaluated revisions to the plan submitted July 29, 1982. In SSER15, NRC provided a safety evaluation that concluded that WBN conforms to the requirements of 10 CFR 50.73. --- LICENSE CONDITION – Physical security of fuel in containment In SSER1, part of the Physical Security Plan (PSP) was not in accordance with the regulation. TVA submitted a new PSP on June 17, 1992. In SSER10, the staff concluded that the provisions for protection of the containment during major refueling and maintenance met the intent of the regulation. --- LICENSE CONDITION - Land Vehicle Bomb Control Program In SSER20, NRC added a license condition for WBN Unit 1 to fully implement the Surface Vehicle Bomb Rule by February 17, 1996. TVA letter to NRC dated February 15, 1996, (submitted for both units) notified NRC that Watts Bar had fully implemented the program.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
14 . 0 . 0	19	CI	LICENSE CONDITION – Report changes to Initial Test Program

In the original 1982 SER, this LICENSE CONDITION was intended to require TVA report to NRC within 30 days of modifying an approved initial test. In SSER7, the NRC accepted a commitment in TVA's July 1, 1991, letter to notify NRC within 30 days of any changes to the Startup Test Program made under 10 CFR 50.59.

Unit 2 action: Notify NRC within 30 days of any changes to the Startup Test Program made under 10 CFR 50.59.

In SSER3, the staff reviewed additional information and FSAR amendments through 46 addressing concerns identified by the staff in the FSAR. They concluded in SSER3 that the Initial Test Program (ITP), with the exception of open items as a result of modifications made to the program in subsequent amendments (through 53) for which the staff requested additional information, would meet the acceptance criteria of SRP section 14.2 and successful completion of the program would demonstrate functional adequacy of structures, systems and components.

In SSER5, the staff reviewed TVA submittals to address the open items from SSER3 and FSAR amendments through 55, and concluded that the program met the acceptance criteria of the SRP and was acceptable.

In SSER9, the staff stated that TVA commitments to reinstate the loss-of-offsite-power test for Unit 2 and revise the acceptance criteria for the reactor building purge system air flow rate (TVA letter dated July 10, 1991, for both units) were found acceptable to address two issues identified by the staff during their review of the FSAR through Amendment 67.

In SSER10, the staff agreed with TVA that there was no need to perform any natural recirculation test for Units 1 and 2 (See subsection 5.4.3.)

In SSER12, the staff evaluated the ITP based on Amendment 74 to the FSAR, which addressed most of the staff's concerns raised during review of Amendment 69, in which the ITP was completely revised. The staff found that Chapter 14, as revised by Amendment 74, was generally adequate and in accordance with review criteria with the exception of 7 items, which would be evaluated in later supplements.

In SSER14, the staff evaluated changes made by TVA in Amendments 84 and 86, as well as 5 TVA letters submitted during 1994 to resolve the issues identified by the staff in SSER12, and changes made in FSAR Amendment 88 to address concerns still open prior to that amendment. The staff found that, with the exception of open items that remained open pending receipt and review of TVA's responses, the WB Units 1 and 2 ITP description contained in FSAR Chapter 14, updated through Amendment 88, was generally comprehensive and encompassed the major phases of the program requirements.

In SSER16, SSER18 and SSER19, the staff evaluated the ITP through amendments 89, 90 and 91 respectively and stated each time that it found the program to be comprehensive and encompassing the major phases of the testing program guidance presented in the SRP.

A Unit 2 issue to verify capability of each common station service transformer to carry load required to supply ESF loads of 1 unit under LOCA condition in addition to power required for shutdown of non-accident unit was raised in SSER14, and the NRC stated that before an OL can be issued for Unit 2, TVA would have to demonstrate the capability of each CSST to carry the loads of one unit under LOCA conditions in addition to power required for shutting down the non-accident unit. TVA agreed with the NRC position in a January 5, 1995, letter and the issue was resolved in SSER16.

Unit 2 action: Amend FSAR Chapter 14 to reflect the capability of each CSST to carry the loads of one unit under LOCA conditions in addition to power required for shutting down the non-accident unit.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 2 . 0	0	OT	Approved for both units in SER. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 2 . 1	14	O	In SSER13, NRC reviewed TVA's use of the FACTRAN computer code for LOCA temperature distribution. NRC concluded that the transient analysis was acceptable. In SSER14, NRC approved the trip time delay functional upgrade as part of the Eagle 21 process protection system for low-low steam generator reactor trip. TVA letter dated December 5, 2007, informs NRC of intent to use Eagle-21 for Unit 2. NRC requested additional information December 27, 2007. TVA provided the requested information by letter dated February 28, 2008. By letter dated May 7, 2008, NRC provided a list of specific issues to be addressed in a future amendment application for Eagle-21 for WBN Unit 2. Unit 2 Action: Provide the additional information for NRC review.
15 . 2 . 3	18	OT	In SSER18, NRC reviewed FSAR amendment 90. In FSAR amendment 90, TVA revised for the transient event of inadvertent ECCS actuation for both Units. TVA provided additional information for both units by letter dated October 12, 1995. In SSER18, NRC found the reanalysis acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 2 . 4	14	OT	15.2.4.1 Uncontrolled Rod Cluster Assembly Bank Withdrawal from Zero-Power Condition In SSER7, NRC reviewed additional analysis submitted for both units for a two pump, zero power, rod withdrawal. The NRC concluded the revision was acceptable. In SSER13, NRC accepted a change to a limiting condition for operation and bases changes to include a requirement that two reactor coolant pumps should be running whenever rods are capable of withdrawal in Mode 4. Unit 2 Action: Submit Technical Specifications. --- 15.2.4.4: OUTSTANDING ISSUE for evaluation of Boron dilution and single failure criteria . In a letter dated November 2, 1984, TVA stated that the boron dilution alarm system receives signals from two independent channels which are independently powered. Additionally, testing of these circuits was described. The staff concluded in SSER4 that the system is adequately protected from single failure and closed this item. In SSER14, NRC reviewed a reanalysis of the accident associated with uncontrolled boron dilution and accepted the analysis. --- 15.2.4.6 Rod Cluster Control Assembly Ejection In SSER14, NRC accepted a change to the maximum cladding temperature for the rod ejection accident made in FSAR amendment 80. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.

* = See last page for status code definition.

SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 3 . 1	15	OT	In SSER12, NRC reviewed the reanalysis of small break loss of coolant analysis (SBLOCA) for Units 1 and 2. NRC found the analysis acceptable. In SSER15, NRC reviewed additional changes to the SBLOCA for Units 1 and 2. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 2	14	OT	In SSER3, NRC reviewed proposed changes to the boron concentration requirement in the Boron Injection Tank and found them acceptable. In SSER14, NRC reviewed TVA application of the new steamline protection feature associated with the Eagle 21 upgrade for WBN Unit 1. The model resulted in the reanalysis of two ruptures: the main feedline and a steamline break outside of containment. Unit 2 Action: Perform analysis. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle:
15 . 3 . 3	14	OT	In SSER14, NRC reviewed TVA application of the new steamline protection feature associated with the Eagle 21 upgrade for WBN Unit 1. The model resulted in the reanalysis of two ruptures: the main feedline and a steamline break outside of containment. Unit 2 Action: Perform analysis. --- Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 4	14	OT	In SSER14, NRC reviewed this section based on VANTAGE 5H fuel and found it acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 5	14	OT	In SSER14, NRC reviewed this section based on VANTAGE 5H fuel and found it acceptable. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 3 . 6	12	CI	LICENSE CONDITION - Anticipated Transients Without Scram (Generic Letter 83-28 Item 4.3) In SSER3, NRC performed an initial review of Generic Letter 83-28 for the Salem anticipated transients without scram events. A new license condition was established for GL 83-28 Item 4.3. In SSER5, the staff found TVA's response to a number of items in GL 83-28 acceptable, including Item 4.3, and thus eliminated this license condition. In a letter dated June 18, 1990, for both units, NRC confirmed that all issues under Item 4.3 were fully resolved. In SSER6, NRC continued the review. In SSER10, NRC completed the review of TVA's submittals for GL 83-28 and found them acceptable. In SSER11, a reference to Item 4.3 that was omitted in SSER 10 was added. In SSER12, NRC provided additional information on Items 3.1.3 and 3.2.3. NRC noted that TVA reported that there would be no post maintenance test requirements in the Technical Specifications for either the reactor trip system or other safety related components which could degrade safety. The NRC had no further concerns. CI in May 28 letter.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
15 . 4 . 1	18	OT	In SSER5, NRC reviewed a change to the estimated fractions in leakage pathways for the release of radioactive material following a LOCA. In SSER9, NRC corrected the filter efficiency for organic iodine. The conclusions reached in the SER and supplements remained unchanged. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. In FSAR amendment 90, TVA increased the amount of leakage that enters the auxiliary building following a LOCA. In SSER18, NRC confirmed this was within the guidelines of 10 CFR Part 100. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 2	15	OT	In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 3	15	OT	LICENSE CONDITION – Steam Generator tube rupture In SSER2, NRC performed an initial evaluation of an actual Steam Generator Tube Rupture (SGTR) that occurred at Ginna. As part of the Westinghouse Owners Group (WOG), WBN committed to implement all corrective actions recommended by the WOG. In SSER5, NRC reviewed the WOG SGTR analysis and determined that plant specific information was required. In SSER12, the staff identified 5 items that required resolution involving 1) operator action times; 2) radiation offsite consequence analysis; 3) systems, 4) associated components credited for accident mitigation in SG tube rupture emergency operating procedures; and 5) system compatibility with bounding analysis. Items 2-5 were resolved in SSER12. In SSER14, the staff stated that a revised SG tube rupture analysis was more conservative and did not alter the conclusions of their Original safety evaluation. With regard to operator response times, TVA letters dated April 21, 1994, and August 15, 1994, and NRC letter dated June 28, 1994, dealt with simulator runs to address response times and operator performance during simulated SG tube ruptures. The staff concluded, after review of the TVA letters, that the times assumed in the tube rupture analysis were satisfactorily verified and deleted this condition. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 4	15	OT	In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
15 . 4 . 5	15	OT	In SSER4, NRC reevaluated the consequences of a fuel handling accident inside primary containment. NRC concluded WBN met the relevant requirements of GDC 61. In SSER15, NRC reviewed revised short term atmospheric relative concentration factors. The conclusions reached in the SER and supplements remained unchanged. Unit 2 action: Use Westinghouse RFA-2 fuel as currently installed in Unit 1 for the initial cycle.
17 . 1 . 0	0	C	Approved for both units in SER. See 17.3.
17 . 2 . 0	0	C	Approved for both units in SER. See 17.3.

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SER SECTION	SSER #	*	ADDITIONAL INFORMATION
17 . 3 . 0	15	C	OUTSTANDING ISSUE - QA program The staff reviewed the description of the QA program in SSER2 and stated that they had resolved the list of open items for which the QA program for the operations phase applies with TVA and concluded that the description was in compliance with NRC regulations. The staff reviewed the organization for the QA program and the NQA Plan, and presented their conclusions in SSER5. They concluded that the program was acceptable for the operations phase of Watts Bar. It was noted, however, that Amendment 63 stated that identification of safety related features would be addressed later and the staff left the outstanding issue unresolved. In SSER10, the staff reviewed additional revisions to the QA program and stated that they did not change the staff's conclusions reached in SSER5. In SSER13, the staff concluded that TVA had established appropriate programmatic controls for identification of safety related features and considered this issue resolved. In SSER15, the staff listed additional revisions to the QA program without comment.
17 . 4 . 0	0	C	Approved for both units in SER. See 17.3.
18 . 1 . 0	16	OV	NUREG-0737, I.D.1, "Control Room Design Review" - NRC reviewed in SSER5, SSER6, SSER15, and Appendix EE of SSER16. In SSER6, the staff concluded that the DCRCR program implemented for Unit 1 satisfied the programmatic requirements of Supplement 1, NUREG-0737. In SSER15, the staff conducted a final onsite audit of the Unit 1 DCRDR and concluded that the product implemented conformed to the DCRDR requirements of Supplement 1, NUREG-0737 and that the DCRDR special program had been effectively implemented. In SSER16, the staff reviewed a TVA reclassification of a human engineering deficiency and concluded that it was satisfactory. Unit 2 Actions: Complete the CRDR process. Perform rewiring in accordance with ECN 5982. Take advantage of the completed Human Engineering reviews to ensure appropriate configuration for Unit 2 control panels. See CRDR Special Program.

STATUS CODE DEFINITIONS

C: CLOSED: Previous staff review of NUREG-0847 and/or supplements has closed the item either for both units at WBN or explicitly for WBN Unit 2.

CI: CLOSED/IMPLEMENTATION: Staff has approved either for both units at WBN or explicitly for WBN Unit 2; there is no change to the approved design; and implementation is recommended through Regional Inspection.

CT: CLOSED/TECHNICAL SPECIFICATIONS: Item has been approved either for both units at WBN or explicitly for WBN Unit 2; however, a change to the original approval requires submittal of the Technical Specifications and staff review.

NA: NOT APPLICABLE: Justification as to why a section / subsection is not applicalbe is provided in the ADDITIONAL INFORMATION column.

O: OPEN: No action or documentation is provided that shows the staff has reviewed the item for WBN Unit 2.

OT: OPEN/TECHNICAL SPECIFICATIONS: No action or documentation is provided that shows the staff has reviewed the item for WBN Unit 2, and the resolution is through submittal of a Technical Specification.

OV: OPEN/VALIDATION: The proposed approach has been approved for Watts Bar Unit 1; the same approach is proposed for use on WBN Unit 2 without change.

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