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

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10 CFR 50.59(d)(2)

U. S. Nuclear Regulatory Commission
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Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Watts Bar Nuclear Plant Units 1 and 2 – 10 CFR 50.59 Summary Report**

References:
1. TVA Letter to NRC, "Watts Bar Nuclear Plant Unit 1 - Title 10, Code of Federal Regulations 50.59 Summary Report" dated April 22, 2016 (ML16113A020)
2. NRC letter to TVA, "Issuance of Facility Operating License No. NPF-96, Watts Bar Nuclear Plant Unit 2," dated October 22, 2015 (ML15251A587)

Pursuant to Title 10, Code of Federal Regulations (10 CFR) 50.59(d)(2), the Tennessee Valley Authority (TVA) is submitting a summary report of the changes, tests, and experiments implemented at the Watts Bar Nuclear plant (WBN), Units 1 and 2 since the last 10 CFR 50.59 report was submitted on April 22, 2016 for Unit 1 (Reference 1). The evaluations summarized in the enclosure cover the period from October 23, 2015 to May 2, 2017 for WBN Unit 1; and for WBN Unit 2 cover the period from the date of issuance of its license (Reference 2) to May 2, 2017; and demonstrate that the described changes do not meet the criteria for license amendments as defined by 10 CFR 50.59(c)(2).

There are no new regulatory commitments in this letter. Should you have questions regarding this submittal, please contact Kim Hulvey, Manager of Watts Bar Site Licensing, at (423) 365-7720.

Respectfully,

Paul Simmons
Site Vice President
Watts Bar Nuclear Plant

Enclosure:

Watts Bar Nuclear Plant, Units 1 and 2 10 CFR 50.59 Summary Report

cc (Enclosure):

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ENCLOSURE
Watts Bar Nuclear Plant, Units 1 and 2
10 CFR 50.59 Summary Report

1. Evaluation: Design Change Notice (DCN) 52630A, R0
2. Evaluation: DCN 52853B, Evaluation R1
3. Evaluation: DCN 56905A, Evaluation R0
4. Evaluation: DCN 59961A, Evaluation R1
5. Evaluation: DCN 62151A, Evaluation R0
6. Evaluation: DCN 63153A, Evaluation R0
7. Evaluation: DCN 63985A, Evaluation R0
8. Evaluation: DCN 64013A, Evaluation R2
9. Evaluation: DCN 65097A, Evaluation R0
10. Evaluation: DCN 65362A, Evaluation R0
11. Evaluation: DCN 66212A, Evaluation R0
12. Evaluation: DCN 66327A, Evaluation R0
13. Evaluation: Temporary Modification (TMOD) 0-2014-030-002 Rev. 2, Evaluation R0
14. Evaluation: TMOD 0-2014-030-003 Rev. 2, Evaluation R2
15. Evaluation: TMOD WBN-0-2016-067-002 Rev. 0, Evaluation R1
16. Evaluation: TMOD WBN-1-2017-067-001 Rev. 0, Evaluation R0
17. Evaluation: TMOD WBN-2-2016-002-001 Rev. 0, Evaluation R0
18. Evaluation: SAR Change Request 01-041, Evaluation R0
19. Evaluation : SAR Change Request 01-042, Evaluation R0
20. Evaluation: 0-STI-67.009 Rev. 0, Evaluation R0
21. Evaluation: 0-STI-67.010 Rev. 0, Evaluation R0
22. Evaluation: Technical Instruction (TI) TI-65 Rev. 27, Evaluation R0
23. Evaluation: WCAP-17834-P Rev. 1, Evaluation R1
24. Evaluation: Compensatory Measures for Condition Report (CR) 1179264 PDO, Evaluation R0
25. Evaluation: Disabled Alarm 2-XA-55-5B-95F OPDP-4, Evaluation R0

1. EVALUATION: DESIGN CHANGE NOTICE (DCN) 52630A, R0

Design Change Notice (DCN) 52630A relocates Unit 2 alarms that alarm in the Unit 1 main control room (MCR) on 1-XA-55-6D, Window 135F (Unit 2 Alarm) back to the new Unit 2 annunciation system. After all the Unit 2 alarms have been moved back to Unit 2 from Unit 1 this window will be spared. Additionally, this DCN installs cables between the Unit 1 and Unit 2 annunciation systems that will allow for the retransmission of signals between the Unit 1 and Unit 2 annunciation systems. DCN 52630 modifies various alarm windows on panel 0-M-27B.

DCN 52630 relocates Unit 2 alarms that annunciate on 1-XA-55-6D, Window 135F (Unit 2 alarm) back to the Unit 2 annunciator system prior to the Unit 2 annunciator system's turnover to operations. From the Unit 1 perspective, these alarms will no longer be functional and a listing of these alarms is in the table below.

Alarm Description
U2 250 DC BA TT CHGR 2 / BD 2 ABNORMAL
U2 250 DC TURB DIST BO 2 UV/BKR TRIP
U2 ACR PNL 2-L-11A XS IN AUX
U2 SHLD BLDG VENT FLOW MONITOR TROUBLE (FS-90-400A)
U2 ALARM M-1 THRU M-6 EXHAUST FANS UNDERVOLTAGE.
U2 PNL 2-M-7 BREAKER TRIP
U2 TSC PWR SYS 2 OR PFD PWR BD 2 ABNORMAL
U2 CST B LEVEL LO-LO (LS-2-233)
U2 BAT B LEVEL HI (LS-62-238A)
U2 BAT B LEVEL LO (LS-62-2388)
U2 BAT B TEMP HI/LO (TS-62-2398)
U2 6.9 SD BD 2A-A XS IN AUX
U2 6.9 SD BD 2B-B XS IN AUX
U2 480 SD BD 2A1-A/2A2-A XS IN AUX
U2 480 SD BD 2B1-B/2B2-B XS IN AUX
U2 2-R-71/72/75/76/79 FUSE BLOWN
U2 480 RX MOV BD 2A 1-A/2A2-A XS IN AUX
U2 480 RX MOV BD 2B1-B/2B2-B XS IN AUX
U2 480 DG AUX BD 2A1-A/2A2-A XS IN AUX
U2 480 DG AUX BD 2B1-B/2B2-B XS IN AUX
U2 RCW BYP STR 2 TO U-2 CT HI DP (PDS-24-192)
U2 RCW PMPS DISCH HDR PRESS LO (2-PS-24-4)
U2 RCW STRAINER DP HI (PDIS-24-2)
U2 TB FDN SUMP LEVEL HI (LS-40-13A)
U2 CST B LEVEL HI/LO (LS-2-232A/B)

The relocation of the Unit 2 alarms that annunciate on 1-XA-55-60, Window 135F (Unit 2 alarm) back to the Unit 2 annunciator prior to the Unit 2 annunciator system's turnover to operations requires a 50.59 evaluation. Therefore, the 50.59 evaluation for this DCN only addresses the removal of these Unit 2 alarms (listed above) from Unit 1.

DCN 52630 also will relocate other Unit 2 alarms that annunciate on 1-XA-55-60, Window 135F (Unit 2 alarm) back to Unit 2 after the Unit 2 annunciator system is operational. The return of these alarms to Unit 2 after the Unit annunciator system is operational does not require a 50.59 evaluation.

Summary of Evaluation:

The proposed modification addressed by this evaluation removes Unit 2 alarms from the Unit 1 main control room annunciator system and moves these Unit 2 alarms back to the Unit 2 annunciator system prior to the Unit 2 annunciator system's turnover to operations. This evaluation addresses the impact on Unit 1 of no longer having these alarms and the impact of having Unit 1 equipment connected to a Unit 2 system not turned over to operations. This change is being performed to facilitate Unit 2 system testing.

The Unit 2 alarms being removed from the Unit 1 main control room do not impact any transient or accident analyses. The changes have no affect on radiological consequences or design basis events. The failure modes of the modification do not create a new type of accident. There are no technical specifications affected by this modification.

2. EVALUATION: DCN 52853B, R1

DCN 52583A will replace a portion of existing analog control systems for WBN Unit 1. This DCN will install new digital controls for the Steam Generator Level Control System (SGLCS). The new Distributed Control System (DCS) is manufactured by INVENSYS, a division of Foxboro. The new system will be built with redundant-fault tolerant processors, redundant input process signals, redundant power supplies (both sources and DC supplies), redundant switched control networks and redundant operator video display units (VDUs). The old analog equipment in the Auxiliary Instrument Room (AIR) racks will be replaced with the INVENSYS DCS components: FCPs (Field Control Processors), FBMs (Fieldbus Modules), FCMs (Fieldbus Communications Modules), base plates, and cables. A new EWS (Engineering Work Station) rack and Master DCS Rack will be installed containing CPUs, monitor, printer, keyboard, trackball, and keyboard-video-mouse (KVM) switches.

New cabinets will be installed in the cable spreading room that will provide an interface between equipment located in the AIR and MCR as well as connect into various field devices. In the MCR, new operator VDUs will be installed on rigid stanchions at M-19A and M-198. There will be a total of 4 new DCS VDUs installed under this DCN - two will be located at M-19A, two at M-198. On each stanchion, one VDU will face the MCR panels and the other will face the 'barge' (seated area). Only the VDUs facing the MCR panels will have capability to access DCS and perform any control, tracking or reset function. A keyboard and trackball will be rigidly mounted on each stanchion and secured so that only the operator 'at the board' can access DCS. The two VDUs facing the 'barge' will only show what is displayed on the 'at the board' VDUs on the opposite side of the stanchions. These 'barge' VDUs will not be able to control, trend or reset any function.

In addition to the DCS VDUs, there will also be four new Integrated Computer System (ICS) VDUs installed under DCN 56904 - two on each stanchion, one on each side of stanchions. There will be a shared keyboard and mouse for ICS functions allowing both operators to access and interface ICS. Numerous existing manual/auto control handstations will be replaced. These include handstations for: a) Main Feedwater (MFW) regulating valves and bypass regulating valves, b) Main Feedwater Pump (MFP) speed and MFP recirculation.

New alarms that alert the operator to DCS status will be added to the annunciator panel on 1-M-4.

This modification replaces numerous old analog components. It directly impacts the following:

- SGLGS - electronic controls for MFPs; electronic controls for MFW regulating and bypass regulating valves; replaces hardware-based median signal selectors (MSS) with software-based (MSS).

Design Function

The MFW system primary functions are to supply a sufficient quantity of feedwater (FW) to the secondary side inlet of the SG during all normal operating conditions, and to ensure that FW will not be delivered from the main feed system to the SG when feedwater isolation is required. The safety function of the FW system is complete isolation of FW to all SGs upon receipt of any of the following signals from the reactor protection system (RPS):

- Hi-Hi SG level, in any SG (1/3 channels to alarm, 2/3 channels to trip)
- Safety injection signal
- Reactor trip coincident with reactor coolant low average temperature (Tavg)
- Hi-Hi water level in either the South or North Main Steam Valve Vault rooms

The safety-related portion of the MFW bypass lines will be an integral part of the Auxiliary Feedwater (AFW) system and will perform a primary safety function in that FW flow to the SGs must be interrupted upon initiation of a FW isolation signal.

Secondary functions of the main FW system include the following:

- Preheating the FW to approximately 440° at 100% load prior to entering the secondary side of the SG (for optimum cycle efficiency).
- Providing condensate and FW deaeration during startup by recirculating FW from a point upstream of the main FW isolation valves back to the main condenser hotwell, utilizing an internal (condenser) diffuser and separate scavenging steam sparger for deaeration.
- Providing minimum flow recirculation as required for system pump protection. In addition to normal modes, of operation, the MFW system is designed to maintain an adequate supply of FW flow to the SG during step changes in load, to prevent a reactor trip on low water level, and to rapidly isolate main and bypass FW supply headers upon receipt of a FW isolation signal.

A normal function of the FW injection water system is to provide an adequate supply of clean seal water to the secondary system pumps' (Condensate Booster Pumps (CBPs), Heater Drain Pumps (HDPs), and Main Feedwater Pumps (MFPs)) mechanical seals during all modes of plant operation.

The FW control system serves to maintain a programmed water level in the shell side of the SG during steady-state operation and to limit the water level shrink and swell in the SG during normal plant transients, thus preventing an undesirable reactor trip.

The credible failure modes identified in the screening review to be discussed and evaluated are:

<u>MFW SGLCS</u>

- CP01, 2, 3 or 4 fails HIGH - causes the associated loop MFW regulating and bypass regulating valves to fail open
- CP01, 2, 3, or 4 fails LOW - causes associated loop MFW regulating and bypass regulating valves to fail closed

- CP01, 2, 3 or 4 fails As-Is - causes associated loop regulating valves to fail 'as-is'
- CP05 fails HIGH - causes MFPs to increase to max speed, MFP recirculation valves fail closed
- CPOS fails LOW - causes MFPs to slow to min speed, MFP recirculation valves fail 'AS-IS'
- CP05 fails As-Is - causes MFPs to fails 'as-is', MFP recirculation valves fail open
- CP06 fails HIGH - NIS signal fails HIGH; SG program level fails to 60%
- CP06 fails As-Is - NIS signal fails 'as-is'; SG program level fails 'as-is'
- CP06 fails LOW - NIS signal fails LOW; SG program level fails to 38%

Summary of Evaluation

The new digital DCS system replaces function-for-function existing analog components for SG level control with many reliability improvements. The new system provides redundant inputs, redundant processors, networks, power supplies, etc. The new system is designated as "Quality Related" and is designed to meet Quality Related requirements; the reliability of new system is superior to the old analog system. The modification does not negatively impact any Structure, System, or component (SSC) that is important to safety nor does it impact the consequences or the frequency of their occurrence. The new DCS does not cause a new type of malfunction or accident to be created. The new DCS reduces the likelihood of failures and their consequences by providing more reliable and redundant control system. In addition, this modification provides the capability to reduce manual operator actions, thereby, allowing greater opportunity for assessment, monitoring, and response.

3. EVALUATION NUMBER: DCN 56905A, R0

Activity Description:

DCN 56905A replaces analog control with digital control with the DCS on Watts Bar Nuclear (WBN) Unit 1 for control of: Main SG Pressure (Atmospheric Dump Valves Control), Steam Dump Pressure, Hotwell Level Dumpback and Makeup, SG Slowdown Flow, Generator Hydrogen Temperature, Main Turbine Oil Tank Temperature, Cold Leg Accumulator (CLA) Nitrogen Supply Valve, Residual Heat Removal (RHR) Heat Exchanger (HX) flow, RHR Letdown, and Chemical and Volume Control System (CVCS, including Excess Letdown flow, Letdown Heat Exchanger outlet temperature and pressure, and Boric Acid Tanks A and C recirculation flow). The new control systems address obsolescence of existing control system equipment and remove many single points of failures which will improve the reliability of the involved control systems on WBN 1.

Summary of Evaluation:

The new digital DCS system replaces function-for-function existing analog components for SGs (1 through 4) Atmospheric Dumps valves, Steam Dump pressure and temperature, CLA Nitrogen Supply valve, RHR Heat Exchanger (A, B, and Bypass) flow, Boric Acid Tanks (A and C) recirculation flow, Excess Letdown Flow, Letdown Heat Exchanger outlet temperature and pressure, SG Slowdown flow, Hotwell level (dumpback and makeup), Generator Hydrogen temperature, and Main Turbine oil tank temperature with many reliability improvements. The new system provides redundant inputs, redundant processors, redundant networks, redundant power supplies, etc. The new system is designated as "Quality Related" and is designed to meet Quality Related requirements; the reliability of the new system is superior to the old analog system. The modification does not negatively impact any SSC that is important to safety nor

does it impact the consequences or the frequency of malfunction. The new DCS does not create a new type of malfunction or accident. The new DCS reduces the likelihood of failures and their consequences by providing a more reliable and redundant control system. In addition, this modification provides the capability to reduce manual operator actions, thereby, allowing greater operator opportunity for assessment, monitoring, and response.

The upgrade to DCS results in overall improvement in the plant and the ability to function with individual devices out of service as:

- DCS provides for use of additional input signals (as available) for control. The DCS will continue to maintain function with the loss of a single input for controls with multiple inputs. In the case of a single input the last good value will be used prior to the failure. The DCS will provide an alarm on the DCS VDU for loss of an input, "DCS Trouble Alarm," and in some cases initiate the "DCS Critical Loop Alarm" on 1-M-4.
- The DCS is powered from redundant power sources thus for loss of any single power supply or power source the DCS will continue to maintain control.
- The signal output to plant control devices (e.g., valves) uses redundant FBMs such that should one FBM fail the other FBM maintains the control of the device.
- For important functions such as SG Atmospheric Dump Valves (ADVs) and Steam Dump to Condenser each SG ADV is on a separate DCS processor pair and the Steam Dump to Condenser is on a processor pair separate from the ADVs.

4. EVALUATION NUMBER: DCN 59961A, R1

DCN 59961 will realign Service Air System (SAS) valves and reinstate the U2 SAS to its pre-2008 configuration (reference PER 146721, DCN 52309, and DCN 52467). A portion of this activity includes opening locked-closed valves 2-ISV-033-0543 and 2-ISV-033-0509.

The only scope in the subject DCN being addressed by this evaluation is opening locked-closed valves 2-ISV-033-0543 and 2-ISV-033-0509 which screened In because they were discussed in the Updated Final Safety Analysis Report (UFSAR) as being required to be locked closed. The remainder of the scope screened out of requiring an evaluation and will not be considered in this evaluation.

Summary of Evaluation:

Opening locked-closed valves 2-ISV-033-0543 and 2-ISV-033-0509 will not impact Unit 1 safety related SSCs by increasing the likelihood of malfunctions, the consequences, or create new malfunctions not addressed by the UFSAR. The valves are non safety related and are located in the turbine building. A failure of the SAS does not initiate any accident addressed in the UFSAR, increase the consequences of an accident, or create new accident scenarios not addressed by the current UFSAR.

5. EVALUATION: DCN 62151A, R0

This test will determine and set Essential Raw Cooling Water (ERCW) throttle valve positions to meet the flow requirements specified in the Test Scoping Document (TSD) issued with DCN 62151. These valve positions are set to ensure continued reliable operation of Unit 1 only service while also preparing the system to be flow balanced in a dual unit configuration in the future. Due to the unit shared design of ERCW, these flow rates are set during Unit 1 only operation such that the valve positions are predicted to maintain the flow requirements for

Unit 1 during and following the dual unit ERCW flow balance performed in support of Unit 2 operation. This DCN and associated TSD are issued as a method of minimizing risk to the highest degree possible.

Summary of Evaluation:

The evaluation considers the impact caused by requiring the normally isolated trained Containment Spray HX being opened to ERCW flow while the associated train is being tested. Opening ERCW flow to a Containment Spray Heat Exchanger during testing has been analyzed, but this has not been analyzed during other non-normal alignments. Therefore, this test requires that operators be stationed to isolate the opened Containment Spray Heat Exchanger at the initiation of any non-normal event or accident. The Containment Spray Heat Exchanger valves that will be opened with a dedicated operator to close during Train B testing are 1-FCV-067-0123-B and 1-FCV-067-0124-B. The valves that will be opened with a dedicated operator to close during Train A testing are 1-FCV-067-0125-A and 1-FCV-067-0126-A. These valves are operable from the control room.

There is no increase in the frequency of occurrence of accident or increase in the likelihood of malfunctions evaluated in the UFSAR. The activity does not result in any offsite or main control room dose changes, new release paths, changes to the fuel cladding, Reactor Coolant System changes, or changes to primary containment. This change is not the initiator of any new accident nor does it result in a malfunction with a different result. There are no new failure modes identified from this test and there is not a change in evaluation methodology. The conclusion is that the change can be implemented per existing processes without obtaining a licensing amendment.

6. EVALUATION: DCN 63153A, R0

The activity being evaluated is the mitigation strategy for the Inability to isolate the Control Air System (CAS) from containment following an accident. The scenario follows a failure of the control air piping inside containment due to jet impingement or pipe whip from a High Energy Line Break (HELB) with a failure of the control air supply containment isolation valve to close. A single locally operated manual valve may serve to isolate the accident unit from the non-accident unit without impacting the non-accident unit, but if this valve cannot be used to isolate the accident unit from the CAS, operators would need to initiate an emergency shutdown of the non-accident unit and disable the CAS for both units prior to exceeding the UFSAR described containment peak pressure for the accident unit.

Since a single valve manipulation with a backup action of disabling the CAS was previously part of the licensing basis and implementing procedures for both units, this evaluation focuses only on the newly proposed operator action to initiate an emergency shutdown on the non-accident unit prior disabling the CAS.

This scenario had previously been Identified and discussed In the UFSAR, but the desire and steps to Initiate an emergency shutdown on the non-accident unit before causing an automatic trip by disabling the control air system was not identified. This activity adds operator action to perform an emergency shutdown of the non-accident unit The additional operator manual action along with the removal of the CAS breakers within 120 minutes will ensure the containment pressure analysis described in Section 6.2 of the UFSAR remains the bounding peak containment pressure.

Summary of Evaluation:

The mitigation strategy for this accident scenario does not result in an increase in the frequency of an initiating event because all operator actions are performed after a Loss of Coolant Accident (LOCA) or HELB on the accident unit and only involve components associated with the nonessential, non-safety related CAS.

The mitigation strategy for this accident scenario does not result in more than a minimal increase in the frequency of an initiating event on the non-accident unit because an emergency shutdown of the non-accident unit is performed prior to shutting down the station air compressors. Prior to this change, the non-accident unit was tripped by disabling the CAS; therefore, this change results in no impact to the frequency of an initiating event since the causes, likelihood, and plant response caused by the initiating event are unchanged.

The mitigation strategy has no effect on the frequency of malfunctions of equipment nor does it introduce a malfunction of a different type because the mitigation strategy relies on equipment in the control air system which has no design functions for accident mitigation and safe shutdown.

The mitigation strategy has no effect on the consequences of any accident or malfunction of equipment or fission product barrier (i.e., containment) because the passive inboard containment Isolation check valve remains functional during this accident scenario.

It is acceptable to mitigate this accident scenario using operator actions because the operator actions meet the requirements of ANS-58.8.

7. EVALUATION: DCN 63985A, R0

Activity Description:

One important aspect of the WBN SG Tube Rupture (SGTR) analysis is a Margin to Overfill (MTO) calculation, which assures that a volume of steam remains in the SG upon termination of the primary-to-secondary leakage. This assures that the release through the ruptured SG's Power-Operated Relieve Valves (PORVs) or safety valves is limited to the steam fraction of the SG, in lieu of the liquid contents of the SG which would be a much more severe event.

Several generic errors were discovered that were applicable to the WBN Unit 1 MTO calculation. When the errors in the calculation were corrected and the event reanalyzed, it was possible to maintain positive MTO but only by changing some of the analysis assumptions. Therefore, in addition to publishing the updated SGTR Plot and Table package, DCN 63985-A performs the following changes to maintain positive MTO:

- The allowable time to terminate AFW flow to the ruptured SG through a failed-open Level Control Valve (LCV) was reduced from 13.5 minutes to 11 minutes.
- If the single failure of loss of a train of power or compressed air disables two SG PORVs on the opposite train from the ruptured SG, then operators must be capable of opening a second SG PORV on the opposite train for cooldown within 22 minutes.

The UFSAR currently declares that a SGTR event will not result in overfill of the ruptured SG. This is met via timely isolation of the ruptured SG, followed by timely depressurization of the Reactor Coolant System (RCS) to terminate the primary-to-secondary leakage. The reduced time to mitigate a postulated single failure of AFW isolation from the ruptured SG is supported by past time validations of this action, in addition to having a contingency that can be implemented without leaving the MCR, and therefore does not increase the likelihood of a

malfunction SG isolation. The requirement for operators to man a second SG PORV when only one intact SG is available for cooldown is reasonable due to the existence of multiple layers of redundancy in the form of robust backup control stations located close to the MCR and therefore is not expected to increase the likelihood of malfunction of the natural circulation cooldown function performed for this event.

By performing these actions, no malfunction or accident of a different type is created (i.e., no liquid release from the ruptured SG), and the consequences of the accident are limited to that of a postulated single failure of the ruptured SG's PORV to close, which is the scenario already analyzed in the UFSAR. There are no subsequent threats to the design limits of any of the three fission product barriers as a result of this change.

The supporting SGTR reanalysis incorporated into the design basis by this change deviates from the approved WCAP-10698-P-A,"SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill," methodology with respect to certain assumptions, such as the direction of conservatism for core decay heat and injection water enthalpy. This was the result of a new set of sensitivities in which each case was performed with various combinations of directions of conservatism for these parameters to determine the worst-case, most limiting results. Since these changes were performed to ensure that the most conservative results were reported, this does not constitute a departure from an UFSAR-described method of evaluation as defined by the 50.59 rule.

8. EVALUATION: DCN 64013A, R2

This DCN removes the flow limitation for Component Cooling Water System (CCS) Pumps 1A-A, 1 B-B, C-S, and 2B-B for the following cases. For CCS Unit 1 Cold Shutdown, Unit 2 LOCA Recirculation Train 1A (requires 8617gpm) and for CCS Unit 1 Refueling, Unit 2 Hot Shutdown Train 2A (requires 8650gpm). These new flow rates affect the loads on the Standby Diesel Generator (SDG) System. Each CCS pump is rated 350hp. For Unit 1 only operation, CCS pumps 1A-A, 1 B-B, C-S are required to be operating at 360 Brake Horse Power (BHP) (103% of its rating) to meet these flow requirements. For dual unit operation, the BHP requirements for the CCS pumps 1A-A, 1 B-B, 2B-B is increased (varying from 106% to 109% of rating) to meet the increased flow requirements. Requirement from CCS pump C-S is increased to 106% when associated with train B (DG 2B-B); but, it is reduced to 96% when associated with train A (DG 1A-A). Calculation EPMGDU031093 recalculates the BHP of CCS pumps based on the revised flow requirements.

During the specific case where one unit experiences a Design Basis Event (DBE) and the other unit is on RHR within 48hrs after its shutdown, a second CCS pump on Train B will required to support the proper cooling of both units. Although this change is not required until Unit 2 fuel load, the impacts to Unit 1 will be included In this DCN. Alternatively, the shutdown unit could be cooled via the SGs for the first 48 hours of shutdown. This evaluation will focus on the situations where a second pump is required.

This change allows for isolation of a Train B section of a single CCS Surge Tank such that a single Train B section of a CCS Surge Tank provides the inventory control for both Unit 1 and Unit 2 CCS Train B. This change is required due to the movement of water volume between the CCS Surge Tanks when adjusting CCS Train B flow using valves 1,2-FCV-70-153-B with both Train B sections of each surge tank are in service.

Summary of Evaluation:

The new BHP impacts the loading on all Diesel Generators (DGs) based on the analysis performed in the DG loading calculation EDQ00099920080014 for dual unit operation. Listed below are the load changes for the flow rate changes associated with DCN 64013.

Diesel	Load Change	Margin Change
DG 1A-A	Reduction in loading by 3.9kW / 4.7kVA	Increase in Margin from 6.5% to 6.6%
DG 1 B-B	Increase in loading by 11.3kW / 10.3kVA	Decrease In Margin from 15.3% to 15.1%
DG 2A-A	Reduction in loading by 5.7kW / 5.24kVA	Increase in Margin from 9.2% to 9.3%
DG 2B-B	Increase in loading by 16.8 kW / 15.4kVA	Decrease in Margin from 12.9% to 12.4%

Therefore, higher BHP requirement from CCS pumps impacts the loading on the associated diesel generator. Per the DG Loading analysis in calculation EDQ00099920080014, the worst case steady state loading is on DG 1A-A. The combined impact of revised BHP requirements for CCS pumps 1A-A and CS, both powered from DG 1A, results in slight reduction in the steady state loading on DG 1A-A. The worst case impact of revised BHP requirements is on DG 2B-B with both CCSP 2B-B and C-S operating at 106%. However, DG 2B-B is lightly loaded compared to DG 1A-A; therefore, the margins calculated in the DG loading analysis calculation is based on the worst loading on DG 1A-A and are not adversely affected by the changes in DCN 64013.

With the above described change the design function of the DGs is not adversely affected.

Requiring two pumps on CCS Train B for certain, limiting conditions, ensures that all equipment receives their design basis flowrates to support the proper cooling of both the accident Unit and the shutdown Unit. This change does not result in more than a minimum increase in frequency or consequences of an accident or malfunction, does not create a new accident or malfunction with different results, has no impact to fission product barriers, and does not use a different methodology as described in the UFSAR.

Allowing the isolation of a Train B Section of a CCS Surge Tank is evaluated to ensure that all equipment functions are served during normal and abnormal conditions, including the required additional manual operator action to establish ERCW emergency makeup to the CCS Surge Tanks. A single Train B Section of a CCS Surge Tank provides the required expansion and contraction capability while also providing a volume of water which is used to detect system leaks. Actions were previously required to establish ERCW emergency makeup to the CCS Surge Tanks and this change adds an action to open one additional manual valve in the immediate vicinity. The loss of the alternate passive vacuum breaker on the opposite surge tank is shown to have no impact for credible bounding events and is of reliable construction such that a mechanical failure which would prevent valve function is not credible. Based on the evaluation, this change does not result in more than a minimum increase in frequency or consequences of an accident or malfunction, does not create a new accident or malfunction with different results, has no impact to fission product barriers, and does not use a different methodology as described in the UFSAR.

9. EVALUATION: DCN 65097A, R0

This DCN installs four new backdraft dampers in the plant for the purpose of mitigating the flow of smoke, from a fire, in the Auxiliary Building on Elevation 757.0. Specifically, the four new backdraft dampers (0-BKD-31-590, -591, -592 and -593) will be installed on the two wall openings between rooms 757.0-A2 and 757.0-A5 and the 2 wall openings between rooms 757.0-A24 and 757.0-A21. These rooms contain the 6.9kV and 480V Shutdown Boards for WBN Units 1 and 2. The wall openings are currently each covered with a grille (0-VENT-31-4260, -4261, 4624, and 4625), located in rooms 757.0-A2 and 757.0-A24, and with fire dampers (0-ISD-31-4620, -4621, 4624, and -4625) installed in each of the four wall openings. The grilles will be removed and the 4 new backdraft dampers will be installed in their place. Each new backdraft damper will be in series with the existing fire damper.

The normal air flow between the rooms is from the 480V Shutdown Board rooms (SDBR) (757.0-A5 and 757.0-A21) to the 6.9kV SDBRs (757.0-A2 and 757.0-A24), through the unducted openings. The new dampers will allow for normal air flow between the rooms and block any air flow in the opposite direction.

A 50.59 evaluation is required as the replacement of the grilles with backdraft dampers, postulated with a single failure, increases the pressure drop across the existing unducted openings which would increase the static pressure within the 480V SDBR. This room borders the MCR Habitability Zone (MCRHZ) which is designed to be maintained at least 0.125" WG above both outside (atmospheric) and the adjacent areas by the MCR Habitability System (MCRHS).

Summary of Evaluation:

The ability of the MCRHS to maintain greater than 0.125" WG of positive pressure inside the MCRHZ as compared to both outside (atmospheric) and adjacent areas is maintained even through the installation of the four backdraft dampers will slightly increase the pressure inside of the 480V SDBR (which borders the MCRHZ). The proposed activity will have no impact on any of the existing surveillance requirements as listed in the Unit 1 Technical Specifications.

There is no increase in the frequency of occurrence of accident or increase in the likelihood of malfunctions evaluated in the UFSAR. The proposed activity does not result in any offsite or main control room dose changes, new release paths, changes to the fuel cladding, RCS changes, or changes to primary containment design pressure. This proposed activity is not the initiator of any new accident nor does it result in a malfunction with a different result. There is not more than a minimal increase in a malfunction, likelihood, or consequences of an accident and there is not a change in evaluation methodology.

The conclusion is that the proposed activity can be implemented per existing processes without obtaining a licensing amendment.

10. EVALUATION: DCN 65362A, R0

This DCN upgrades the Main Feedwater Regulating Valve (MFRV) and Main Feedwater Regulating Bypass Valve (MFRBV) control hardware to improve reliability and eliminate SPVs. This DCN changes the valve control hardware for the Watts Bar Unit 1 MFRVs and MFRBVs.

This DCN eliminates multiple Single Point Vulnerabilities (SPVs) in the MFRV and MFRBV control hardware. For the MFRV, the volume booster and two pressure regulators (PREGs) are eliminated. For the MFRBV, a PREG is eliminated, and the FWI solenoid is replaced with the redundant assembly currently used on the MFRVs, eliminating the solenoid and control signal power and fuse as SPVs. Control air tubing at the valve and at 1-L-87 is simplified, with the elimination of several fittings for each valve. These changes all serve to make the MFRV and MFRBV control hardware more reliable, and reduce the occurrence of SSC malfunctions that could contribute to Loss off Feedwater or Excess Heat Removal.

For each MFRV and MFRBV, this DCN upgrades the existing Non-Safety Current to Pressure (I/P) converter and pneumatic positioner to a Non-Safety digital valve positioner, a Fisher DVC6200. The DVC6200 is used at multiple nuclear sites for FW regulating valve control, and digital positioners have been in use at nuclear sites for more than 10 years. The DVC6200 has a very reliable operating history, with an operating base of more than 500,000 units in commercial operation, and over a billion hours of runtime for the software version installed by this DCN, with no software failures.

As reviewed in the 10CFR50.59 Screening, this DCN does not introduce any adverse changes. However, this DCN is conservatively Screened In for evaluation to demonstrate that the affects of an incredible Common Cause Software Failure (CCSF) failure are bounded by existing analysis. Because a digital device is installed, NEI 01-01 guidelines are followed.

Summary of Evaluation:

This DCN upgrades Non-Safety analog equipment to digital equipment. As discussed in Screening Question 1, this change is not adverse to any UFSAR design function.

The MFRVs and MFRBVs control FW flow, a UFSAR design function (UFSAR 10.4.7.2). Feedwater flow affects two UFSAR analyzed accidents, 15.2.8 Loss of Normal Feedwater, and 15.2.10, Excessive Heat Removal Due to Feedwater System Malfunctions. The MFRVs and MFRBVs are also used in the Safety Related Feedwater Isolation design function (UFSAR 10.4.7.3).

This DCN eliminates SPVs in the MFRV and MFRBV control hardware and upgrades the pneumatic controls to a more reliable digital positioner. Therefore this DCN does not result in more than a minimal increase in the frequency of occurrence of affected accidents or the likelihood of occurrence of malfunctions of an SSC important to safety. This DCN does not affect the dose consequences of accidents or malfunctions; any fission product barrier design basis limit; or any evaluation method described in the UFSAR for establishing the design bases or in the safety analyses.

The existing failure modes of the FW regulating valves are not affected, no new valve failure modes are created, and no new result of the valve failure modes is created.

Thus, this design can be implemented without prior NRC concurrence.

11. EVALUATION: DCN 66212A, R0

Activity Description:

This change for the Emergency Gas Treatment System (EGTS) discusses performance of EGTS testing on one unit while maintaining its ability to perform its design basis functions on the other unit. The alignment of the EGTS Air Cleanup Subsystem (ACUS) on one unit creates a

potential for the ACUS function on the other unit to be compromised should an accident occur. Putting the Refueling Unit Annulus Vacuum Control System (AVCS) in-service prior to assuring the integrity of one unit's annulus creates a potential for the function of the Auxiliary Building Gas Treatment System (ABGTS) to be compromised due to the unknown in-leakage from the annulus into the Auxiliary Building. TS Limiting Condition for Operation (LCO) and manual action requirements are specified based on equipment that must be considered available and isolated to ensure EGTS·ACUS and ABGTS can serve their design basis functions for the opposite unit.

Summary of Evaluation:

The evaluation considers the impact caused by testing the ACUS on one unit while the ACUS is required to remain operable to function post LOCA supporting the other unit. The evaluation also considers the impact caused by having the Refueling Unit AVCS in-service while the ABGTS must be able to perform its design basis functions.

Testing the ACUS on one unit while the ACUS remains capable of being operable on the other unit has been analyzed, but the calculation assumes annulus in-leakage meets Technical Specification SR 3.6.15.4 requirements and that no failure occurs on the EGTS equipment associated with the train not in test. Since EGTS could be aligned to a unit when in-leakage is not verified, the calculation cannot be used unless actions are taken to mimic the analyzed alignment. Therefore, manual operator actions are required to isolate the ACUS from the test unit following receipt of a Phase A Containment Isolation signal on the non-test unit prior to inleakage verification. Once the test unit annulus inleakage is verified to be within specifications, the calculation shows that ACUS testing may occur without impacting the ability of the ACUS to meet its design basis function supporting the non-test (accident) unit without the need for manual operator actions assuming a single failure does not occur on the opposite train. Once annulus in-leakage is verified to be within specifications for both units, EGTS ACUS testing may be conducted without the need for manual operator actions.

If any of the below listed dampers are to be opened prior to validation that the "test unit's" annulus in-leakage meets its Technical Specification SR 3.6.15.4 requirements and the "Accident Unit" receives a Phase A Containment Isolation Signal, the following actions to close the listed damper or stop and secure the listed fan are required to be completed from the control room within 75 seconds. Since the Unit 2 dampers have been tested with a stroke time of less than 20 seconds, a new stroke time requirement of 25 seconds is established, which leaves the operator 50 seconds to perform the action. Either closing the identified damper or stopping the identified fan meets the need and only one of the listed dampers may be opened for testing at any time.

	Action(s) for Phase A on "Accident Unit"	
LCO / Test Train	**Unit 1 Test Unit / Unit 2 Accident Unit**	**Unit 1 Accident Unit / Unit 2 Test Unit**
A	1-FCV-065-0010-A and/or 0-FAN-065-0023	2-FCV-065-0009-A and/or 0-FAN-065-0023
A	1-FCV-065-0008-B and/or 0-FAN-065-0023	2-FCV-065-0007-B and/or 0-FAN-065-0023
B	1-FCV-065-0030-B and/or 0-FAN-065-0042	2-FCV-065-0029-B and/or 0-FAN-065-0042
B	1-FCV-065-0051-A and/or 0-FAN-065-0042	2-FCV-065-0050-A and/or 0-FAN-065-0042

Manual operator actions are required to have the following dampers closed within 75 seconds for the "Unknown In-leakage" unit to isolate a unit's EGTS AVCS following receipt of an Auxiliary Building Isolation (ABI) if in-leakage requirements per Technical Specification SR 3.6.15.4 are not satisfied. Since the Unit 2 dampers have been tested with a stroke time of less than 5 seconds, a new stroke time requirement of 25 seconds is established, which leaves the operator 50 seconds to perform the action. The use of manual operation with a dedicated operator meets the requirements of a temporary manual action under the guidance provided in NEI 96-07, Revision 1 and WB-DC-40-64 Appendix A.

Actions for ABI	
Unit 1: Unknown In-leakage / Unit 2: Other Unit	**Unit 1: Other Unit / Unit 2: Unknown In-leakage**
1-FCV-065-0052-A and 1-FCV-065-0053-B	2-FCV-065-0004-B and 2-FCV-065-0005-A

The use of manual operation with a dedicated operator meets the requirements of a manual action under the guidance provided in NEI 96-07, Revision 1 and WB-DC-40-64 Appendix A. There is no increase in the frequency of occurrence of accident or increase in the likelihood of malfunctions evaluated in the UFSAR. The activity does not result in any offsite or MCR dose changes, new release paths, changes to the fuel cladding, RCS changes, or changes to primary containment. This change is not the initiator of any new accident nor does it result in a malfunction with a different result. There are no new failure modes identified from this change and there is not a change in evaluation methodology.

12. EVALUATION: DCN 66327, R0

Activity Description:

DCN 66327 increases the WBN Unit 2 Reactor Protection System response time for the Overtemperature Delta-T (0TΔT) Trip and Overpower Delta-T (0PΔT) Trip Functions from 6.5 to 8.0 seconds for the temperature sensors and from 8.0 to 9.0 seconds for the functions overall response time.

Summary of Evaluation:

The transients and accidents affected by increases the Reactor Protection System response time for the Overtemperature Delta-T (0TΔT) Trip and Overpower Delta-T (0PΔT) Trip Functions have been evaluated using approved methodologies. The change does not adversely affect the environmental qualification of any safety related equipment. As such, it does not result in an increase in the frequency of an UFSAR evaluated accident or malfunction, an increase in the consequences of an accident or malfunction, or create a different type of accident or malfunction than previously evaluated in the UFSAR. No fission product barriers design basis limits are exceeded or altered. The change was found to have no affect on the radiological consequences of any design basis events.

13. EVALUATION: TMOD 0-2014-030-002 Rev. 2, Evaluation R0

Unit 2 desires to operate the Unit 2 Containment Purge system (U2 CPS). Certain U2 CPS valves perform a Unit 1 Interim Auxiliary Building Secondary Containment Enclosure (ABSCE) Isolation function and their permanent Unit 1 design requires control air to them to be isolated and the valves failed closed. Those valves and other U2 CPS valves and components have

been temporarily modified in accordance with TMODS 0-2014-030-002 R1 and 0-2014-030-003 R1 to provide redundant automatic ABSCE Isolation upon receipt of Auxiliary Building Isolation (ABI) or High Rad in Refueling Area (HRRA) isolation signals. Revision 2 of this TMOD changes the configuration of the control circuits of the valves and fans that receive the isolation signal. The revision 2 configuration includes the Unit 2 Solid State Protection System (SSPS) slave relay contacts in series with the temporary relay contacts installed by revision 1 of this TMOD. The control circuits of the coils of the Unit 2 SSPS relays are not modified and are under Unit 2 control. This review only addresses the Unit 1 ABSCE function. The scope of the review is adding the control circuits to Unit 1 and modifying them so that Unit 1 does not rely on Unit 2 SSPS to isolate ABSCE. There are no ductwork modifications in the scope of this TMOD, they are in TMOD 0-2014-030-003.

The fans that stop in response to the control signal are not safety related and are not required to stop to protect the ABSCE boundary. The population of valves is the system 30 valves that will in the future receive a Unit 2 Train A Containment Ventilation Isolation (CVI) signal. At present the Unit 2 reactor building is open to the environment. A TMOD is implementing the configuration because the Unit 2 SSPS, which is intended to be part of the automation scheme in the future, is not available for service.

Unit 1 DCN 52220-A modified the Train A and Train B electrical circuits of the high radiation in the refueling area logic bus and the Train A and Train B SSPS input to create the "ABI/CVI" design. Unit 2 has the same design. TMOD 0-2014-030-002 modifies the Train A electrical circuits for ABI and HRRA. The modification is implemented in Auxiliary Relay Rack 2-R-73 which is operating in support of Unit 1 and Unit 2 SSPS rack

2-R-48 which is not In active Unit 2 service but it qualified to Seismic category I standards and owned by Unit 1. Components that have been designed, procured, and installed by Unit 2 to equivalent standards as Unit 1 will be tested and placed in service for Unit 1. Any outstanding Unit 2 construction work will be evaluated for its impact on the proper operation of the equipment. The actuating signal originates in Auxiliary Relay Rack 1-R-73 and is sent to 2-R-73 on a cable originally intended to carry the Unit 2 CVI signal. In rack 2-R-73 the signal passes through 2-HS-90-410, which will be placed under Unit 1 control. When 2-HS-90-410 is in the refuel position the signal will actuate two temporary Cutler Hammer type AR relays that are equivalent to Unit 2 SSPS slave relays K615 and K622. The relays' contacts are wired to temporary cables in temporary conduits routed to Unit 2 SSPS rack 2-R-48. The cables and conduit are designed to permanent design standards and Electrical loading and voltage drop calculations have been performed. Within 2-R-48 the temporary relay contacts are wired in series (normally closed contacts open upon actuation signal) with the permanent Unit 2 slave relays. If Unit 2 activities actuate the permanent relays the components controlled by them will go to the accident position but will not affect Unit 1 operation. 2-HS-90-410 must be in the Refuel position when the automatic isolation function is required. The design of the train B controls are similar to train A and are described in detail in TMOD 0-2014-030-003.

The Unit 2 isolation valves, including the ductwork and dampers, were designed and qualified to perform the same functions as their Unit 1 counterparts and the same or equivalent design, fabrication, and construction standards were used. It is noted that the isolation valves are ASME Section III Class 2 or 3 and qualified to Seismic Category I requirements, the dampers are mounted in the ductwork to Seismic Category I requirements, and the ductwork supports has been addressed and qualified under the Unit 2 Heating Ventilation and Air Conditioning (HVAC) Duct and Duct Supports Corrective Action Plan (CAP).

A Technical Evaluation (TE) was performed for this modification and is included in the TMOD. The TE determined this activity complies with the safety and functional requirements specified in

the applicable design basis documents and does not adversely affect the performance of any safety related equipment. This change does not introduce any new failure modes. Therefore, based on compliance with established design basis requirements, this change is safe and acceptable from a nuclear safety standpoint.

Credible failures associated with implementation of TMOD 0-2014-030-002 include failure of the affected relays and associated hand switches. The primary relevant design basis accidents are those that could cause an ABI.

Summary of Evaluation:

The proposed temporary modifications do not increase the frequency or likelihood of accidents or malfunctions, increase the consequences of an accident or malfunction, or create a new type of accident. The design basis fission product barriers will not be altered or exceeded. No new method of evaluation was used in evaluating the proposed temporary modification.

As a result of this valuation, it is concluded that this activity does not meet any of the criteria of 10 CFR 50.59(c)(2), and therefore, obtaining prior NRC approval is not required to implement this activity.

14. EVALUATION: TMOD WBN-0-2014-030-003 Rev. 2, Evaluation R2

Unit 2 desires to operate the Unit 2 Containment Purge System (U2 CPS). Certain U2 CPS isolation valves perform a Unit 1 interim ABSCE isolation function and their permanent Unit 1 design requires control air to them to be isolated and the valves failed closed. Those valves and other U2 CPS valves and components have been temporarily modified in accordance with TMODs 0-2014-030-002 R1 and 0-2014-030-003 R1 to provide redundant automatic ABSCE isolation upon receipt of ABI or High Rad in Refueling Area (HRRA) isolation signals. Revision 2 of this TMOD changes the configuration of the control circuits of the valves and fans that receive the isolation signal. The revision 2 configuration includes the Unit 2 SSPS slave relay contacts in series with the temporary relay installed revision 1 of this TMOD. The control circuits of the coils of the Unit 2 SSPS relays are not modified and are under unit control. This review only addresses the Unit 1 ABSCE function. The scope of the review is automation of the ABI/HRRA Isolation function of the valves required to provide redundant ABSCE isolation in the interim and final ABSCE configurations and ensuring the pressure boundary between and including the valves is qualified. This TMOD includes all mechanical components and civil features required to qualify the pressure boundary. Specifically, the Secondary and inboard (located in the Annulus) Containment Purge Isolation valves, all the ductwork between these valves, and the manual insert mounted balancing dampers located in the ductwork. This TMOD and TMOD 0-2014-030-002 also include valves and ductwork not credited as ABSCE components. They are included to ensure Unit 2 activities will not adversely affect the ABSCE components. Two TMODs are used so that only one train of actuation logic is inoperable at a time. A TMOD is implementing the configuration because the Unit 2 SSPS, which is intended to be part of the isolation scheme, is not available for service.

Unit 1 DCN 52220-A modified the Train A and Train B electrical circuits of the high radiation in the refueling area logic bus and the Train A and Train B SSPS input to create the so called "ABI/CVI" design. Unit 2 has the same design. TMOD 0-2014-030-003 modifies the Train electrical circuits tor ABI and HRRA. The modification is implemented in Auxiliary Relay Rack 2-R-78 which is operating in support of Unit 1 and Unit 2 SSPS rack 2-R-51 which is not in active Unit 2 service but is qualified to Seismic category I standards and owned by Unit 1. Components that have been designed, procured, and installed by Unit 2 to equivalent standards as Unit 1 will be tested and placed in service for Unit 1. Any outstanding Unit 2 construction

work will be evaluated for its impact on the proper operation of the equipment The actuating signal originates in Auxiliary Rack 1-R-78 and is sent to 2-R-78 on a cable originally intended to carry the Unit 2 CVI signal. In rack 2-R-78 the signal passes through 2-HS-90-415, which will be placed under Unit 1 control. When 2-HS-90-415 is in the refuel position the signal will actuate two temporary Cutler Hammer Type AR relays that are equivalent to Unit 2 SSPS slave relays K615 and K622. The relays' contacts are wired to temporary cables in temporary conduits routed to Unit 2 SSPS rack 2-R-51. The cables and conduit are designed to permanent design standards and Electrical loading and drop calculations have been performed. Within 2-R-51 the temporary relay contacts are wired in series (NC contacts open upon actuation signal) with the permanent Unit 2 slave relays. If Unit 2 activities actuate the permanent relays the components controlled by them will go to the accident position but will not affect Unit 1 operation. 2-HS-90-415 must be in the Refuel position when the automatic isolation function is required. The design of the train A controls are similar to train B and are described in detail in TMOD 0-2014-030-002.

The Unit 2 isolation valves, including the ductwork and dampers, were designed and qualified to perform the same functions as their Unit 1 counterparts and the same or equivalent design, fabrication, and construction standards were used. It is noted that the isolation valves are ASME Section III Class 2 or 3 and qualified to Seismic Cat 1 requirements, the dampers are mounted in the ductwork to Seismic Category 1 requirements, and the ductwork/ supports has been addressed and qualified under the Unit 2 HVAC Duct and Duct Supports CAP.

A TE was performed for this modification and is included in the TMOD. The TE determined this activity complies with the safety and functional requirements specified in the applicable design basis documents and does not adversely affect the performance of any safety related equipment. This change does not introduce any new failure modes. Therefore, based on compliance with established design basis requirements, this change is safe and acceptable from a nuclear safety standpoint.

Credible failures associated with implementation of TMOD 0-2014-030-002 include failure of the affected relays and associated handswitches. The primary relevant design basis accidents are those that could cause an Auxiliary Building Isolation (ABI).

The proposed temporary modifications do not increase the frequency or likelihood of accidents or malfunctions, increase the consequences of an accident or malfunction, or create a new type of accident. The design basis fission product barriers will not be altered or exceeded. No new method of evaluation was used in evaluating the proposed temporary modification.

As a result of this evaluation, it is concluded that this activity does not meet any of the criteria of 10 CFR 50.59(c)(2), and therefore, obtaining prior NRC approval is not required to implement this activity.

15. EVALUATION: TMOD WBN-0-2016-067-002 Rev. 0, Evaluation R1

Preventative Maintenance (PM) cannot be performed on 0-CKV-67-503G-B with the ERCW B-Train in service due to the upstream isolation valve (0-ISV-67-503G-B) not being able to provide an adequate isolation boundary. Furthermore, 1-FCV-67-24-B (1B-B Strainer Inlet Isolation Valve) has failed in the closed position thus creating a single point vulnerability on the ERCW B-Train with only 1 strainer available.

Maintenance can not be performed on either one of these valves with the B-Train in Service. Therefore, WBN has elected to remove the ERCW B-Train from service to allow for the PM on 0-CKV-67-503G-B and the repair on 1-FCV-67-24-8. Removing the B-Train of ERCW from

service for the maintenance activity will require removing all supporting B-Train equipment from service to prevent an inadvertent start of equipment without cooling flow to those components. This includes all B-Train ERCW Loads and the B-Train of the CCS, ECCS, DGs, and various B-Train Chillers/Coolers.

One of the concerns related to removing the B-Train from service is the impact on containment temperatures and RCP motor winding temperatures. The TE associated with this Temporary Modification concludes that containment temperatures should be adequate with A-Train Lower Containment Coolers (LCCs) in service (with the LCCs having their respective temperature control valves (TCVs) wide open) and B-Train LCC Fans in operations with Essential Raw Cooling Water (ERCW) temperatures <60 °F. However, to ensure there is adequate containment cooling, a temporary supply of cooling flow will be supplied to the B-Train Lower Containment Coolers for both Units. While the ERCW B-Train is removed from service, Raw Cooling Water (RCW) will be supplied via an 8" flood mode spool piece and opening of 0-ISV-67-5328 and 0-ISV-24-826. This will provide flow to the 1B Header and will also be supplied to the 2B Header by use of the cross-tie line in the Intake Pumping Station (IPS). This is a compensatory measure utilized to minimize the risk to the plant during the maintenance activity.

Summary of Evaluation:

The evaluation only evaluates the temporary supply of RCW to the B-Train LCCs of each unit. The B-Train of ERCW will be removed from service and all supportive B-Train Equipment will be rendered inoperable by the maintenance activity. Removing equipment from service (making it inoperable) for maintenance within the Technical Specification (TS) allowed outage time does not require a Section 50.59 Evaluation and is addressed by the plants implementation of 10 CFR 50.65(a)(4).

The proposed change does not impact the ability of the LCCs to perform their safety functions of circulating air during any Non-LOCA accident. The proposed change is only changing the source of water provided to the LCCs, Control Rod Drive Mechanism (CRDM) Coolers, and Reactor Coolant Pump (RCP) Motor Coolers from ERCW to RCW which is strained to the same requirements and does not exceed the pressure/design temperatures of the ERCW System. The proposed change does not introduce a new malfunction, a new accident, or increase the consequences from a design basis accident. It is concluded that the temporary supply of RCW will support the design function of the Lower Containment Coolers to maintain the Lower Containment Temperatures within the TS limit of 120°F.

16. EVALUATION: TMOD WBN-1-2017-067-001 Rev. 0, Evaluation R0

LCC 1D-B upper and lower cooling cons located adjacent to the Steel Containment Vessel (SCV) and on the west end (closest to the centerline of Fan Room 1) of the cooler have minor teaks (approximately .25 gpm total). This evaluation covers TMOD WBN-1-2017-067-001 which will blank off the supply and return of the ERCW to these two cooling coils. This will result in six out of the eight coils remaining functional. Blanking plates constructed of 0.1345" thick stainless steel plate (QA-1, ASME Section III, Class 2, ASME SA 240, TP304) capable of withstanding the design ERCW System pressure of 160 psig will be installed at the supply and return flanges associated with the leaking coils. The gasket material included in the change is 1/8" thick (maximum) ethylene propylene diene monomer (EPDM) and is a suitable replacement for the phenolic flat neoprene coated gaskets currently installed. This TMOD will isolate ERCW flow to these coils only and will not adversely impact continued ERCW and air flow to the remaining six coils associated with this cooler.

Proper operation of the LCC cooling coils is not a safety related function. Operation of all four of

the LCCs are needed during the time period when ERCW temperatures are at their highest during the year. Operation of these coolers is needed to maintain containment air temperature of 120 °F during normal plant operation. If the water leak is allowed to continue an increase in the relative humidity levels Inside lower containment is expected. This condition could mask water leaks inside lower containment.

Summary of Evaluation:

Proper operation of the LCC cooling coils is not a safety related function and not required for mitigation of any UFSAR Chapter 6 or 15 accidents. The blanking plates will be designed to meet the design conditions of the ERCW system. The design basis functions (movement of air in lower containment) of the LCC 1 D-B is maintained and not adversely impacted by this proposed design change. Therefore this change does not result in any new accidents or malfunctions, and does not result in increased frequency or consequences of accidents or malfunctions evaluated in the UFSAR. In addition, no fission product barriers are challenged by this change.

As a result of this evaluation, it is concluded that this activity does not meet any of the criteria of 10 CFR 50.59(c)(2), therefore obtaining prior NRC approval is not required to implement this activity.

17. EVALUATION: TMOD WBN-2-2016-002-001 Rev. 0, Evaluation R0

During Unit 2 Power Ascension Testing (PAT), Unit 2 has multiple reactor/turbine trips planned to test the response of Unit 2. During a trip, the condensed steam in the condenser will auto dump back to the Unit 2 Condensate Storage Tank (CST-B) on high Hotwell level. Past Operating Experience from TVA startups have shown that the water will be of low quality due to contaminants that are still found in the secondary side. In lieu of a feed and bleed operation to clean up the CST, this T-Mod will Install a temporary purification loop. The closed loop will allow for clean up of the CST contents after a Unit 2 trip/transient. The supply will be from 2-DRV-002-0501 which is the CST-B drain valve. The temporary hose will be routed to two pumps in parallel configuration. Only 1 pump will be in operation at a time. The discharge of the pumps will be routed through a bag filter skid, then through a mobile Demineralization (DI) Trailer, then to 2 mixed bed vessels (parallel; only one in operation at a time), and then routed back to the CST via hoses. The cleaned condensate will be supplied back to the top of the CST-B through a nozzle in the manway on top of the tank. This purification loop will only be utilized after a unit
trip when a significant quantity of poor quality water Is auto dumped beck to the CST on high hotwell level.

2-DRV-002-0501 is a normally locked dosed valve. The valve provides a way to drain the CST-B for any maintenance activities that would require the tank to be drained. Therefore, it Is normally locked closed to prevent any inadvertent draining of the CST and potentially compromising the TS requirement of 200,000 gallons available. Under this T-MOD, the valve will remain normally locked closed. When the purification loop is in service, the valve will be required to be opened by an Auxiliary Unit Operator (AUO). General Electric (GE) Water personnel will be required to provide continuous attendance of the purification loop while in service and/or 2-DRV-002-0501 is open. This will provide assurance that any leak/break in the line can be quickly identified and Operations can be immediately notified to dispatch an AUO to close 2-DRV-002-0501. Furthermore, an additional ICS alarm will be added at a tank level equivalent to 240,000 gallons. This will provide a minimum of 15 minute notification, per Attachment 1 of the T-Mod, to Operations prior to reaching the TS limit of 200,000 gallons due to a complete failure in the hose connection to 2-DRV-2-501 while the valve Is open. Also, 2-

ARI-36-42 is being revised to direct an AUO to ensure 2-DRV-2-501 is closed If the Low level (210,000 gallons) alarm Is received In the control room, though the GE Water personnel stationed near the temporary loop and the ICS alarm at 240,000 gallons will have already signaled that there has been a malfunction in the temporary loop. Operations will have a minimum of 4.2 minutes to isolate 2-DRV-2-501 once the low level alarm (210,000 gallons) is received in the MCR upon a complete failure of the hose connection at 2-DRV-2-501. However, after a successful Post Modification Test (PMT), a complete failure of the hose connection to 2-DRV-2-501 is not likely. A "likely" malfunction would be a leak in the temporary piping/hose which would provide much more than the 15 minutes (240,000 gallons) and 4.2 minutes (210,000 gallons) of minimum Operation response.

Once the closed loop is installed, the PMT will test the system for leaks and will ensure the temporary loop is functioning properly with no leaks. GE Water personnel will be required to notify Operations when they are done operating the loop, so that the 2-DRV-002-0501 can be locked CLOSED. It is expected that the loop will only be in operation 1-2 days at a time, and this is the time frame in which 2-DRV-2-501 will be open.

Summary of Evaluation:

The condensate system collects the water condensed from the exhaust of the low pressure turbines in the condenser hotwell, and raises Its pressure and temperature to levels suitable for supplying to the suction of the MFW and standby MFW pumps. The condensate system is the primary (non-safety) source of supply to the AFW system.

The design function of the CSTs, with respect to the AFW System, is to serve as the preferred, non-safety related source of water. As stated in UFSAR Section 9.2.6, the CSTs are not an engineered safety feature and are not seismically qualified. The CSTs supply the preferred source of water to the AFW System, but the engineered safety feature source is the ERCW System (Safety Class 2b). The design function of the AFW System is to supply sufficient FW to the SGs to remove heat from the primary side of the plant, when required. The AFW and ERCW Systems are required to function for many DBEs. None of which are impacted by this TMOD.

TS 3.7.6 requires the CST level to be $\geq$ 200,000 gallons. The proposed change does not impact the ability of the CST to obtain/maintain that volume of water. GE Water personnel will provide continuous monitoring of temporary purification loop when in service and/or 2-DRV-2-501 is open. An additional ICS alarm is being added at a CST-B level equivalent to 240,000 gallons to: (1) prevent air ingestion into the main condenser through the automatic makeup function of 2-LCV-2-9 and (2) provide additional margin to prevent reaching the CST-B low level of 210,000 gallons. Also, if the low Level (210,000 gallons) alarm is received in the MCR, 2-ARI-36-42 is being revised by this TMOD to direct the AUO to ensure that 2-DRV-2-501 is closed. The above compensatory actions are provided to ensure the TS level of 200,000 gallons is maintained. The use of 2-DRV-2-601 to provide a flow path to the temporary loop does not impact the ability of the valve to be isolated, if required, to maintain level in the CST due to a postulated failure in the temporary piping.

The proposed change does not impact the ability of the Safety Related ERCW and AFW to perform their intended functions. The proposed change does not introduce a new malfunction, a new accident or increase the consequences from a design basis accident. It is concluded this T-Mod will not impact the ability to meet system design functions nor does it impact the ability to satisfy TS surveillance requirements. This change is positive as it will allow for cleanup of the CST-B while saving time and water.

18. EVALUATION: SAR CHANGE REQUEST 01-041, EVALUATION R0

The Unit 1 Cycle 15 (U1C15) reload safety evaluation is the first use of the ABB-NV and WLOP Departure from Nucleate Boiling (DNB) correlations as replacements for W-3 DNB correlation. The replacement correlations are used for Departure from Nucleate Boiling Ratio (DNBR) evaluations in fuel regions below the first mixing vane grid where the primary DNB correlation, WRB-2M, does not apply.

Summary of Evaluation

Replacement of the W-3 DNB correlation with the ABB-NV and WLOP DNB correlations in the safety analyses was performed to improve DNBR margin in the fuel regions below the first mixing vane grids. The use of the new correlations has been reviewed and approved by the NRC. The response to screening questions 1, 2, 4, and 5 was no. The response to screening question 3 was yes for this change in the method of evaluation, which requires a 50.59 evaluation. Since the new method has been reviewed and approved for this use by the NRC, the 50.59 evaluation concluded that the replacement DNB correlations can be implemented without obtaining a License amendment.

19. EVALUATION: SAR CHANGE REQUEST 01-042, EVALUATION R0

The proposed activity revises the WBN UFSAR to acknowledge the use of the PARAGON methodology as a replacement for the PHOENIX lattice physics code for Unit 1. The PARAGON method was approved by the NRC as a replacement for PHOENIX. The PARAGON code improves the transport method used to solve for the neutron flux.

Summary of Evaluation

A 50.59 evaluation is required because the PHOENIX method of evaluation described in UFSAR Chapter 4 is being revised to acknowledge the use of PARAGON for Unit 1. It is shown that the change does not constitute a departure from a method of evaluation and, therefore, that a license amendment is not required prior to implementation of the change. The use of PARAGON does not constitute a departure because (1) the methodology is approved by the NRC specifically for PWR uranium fueled cores and (2) the application of PARAGON for WBN Unit 1 is consistent with the terms, conditions, and limitations of that NRC approval. In addition, the modification to PARAGON to incorporate the unclassified Tritium Producing Burnable Absorber Rod (TPBAR) model does not constitute a methodology change because the NRC has previously reviewed and approved the incorporation of the TPBAR model into the PHOENIX lattice physics code which has been used to model Unit 1 cycles 2 through 15.

20. EVALUATION: 0-STI-67.009 REV. 0, EVALUATION R0

Watts Bar is currently implementing a project to increase TS 3.7.9, Ultimate Heat Sink (UHS), maximum temperature limit from the current value of $\leq$85°F to $\leq$88°F. Part of the effort is to replace the existing ERCW flow model currently used to predict and verify system operation with an updated model.

Data previously taken during the dual unit flow balancing of ERCW will be utilized for the benchmarking effort. However, the dual unit flow balances performed during Unit 2 startup did not include the extent of pressure data needed for model benchmarking. The purpose of 0-STI-67.009 is to obtain additional component flow and pressure data from the ERCW Train A during normal plant operation. This is a new procedure that is being developed for a one-time performance to obtain the necessary data. Flow rates will primarily be monitored using

ultrasonic flow measurement devices, although the use of differential pressure gauges will be allowed, as deemed appropriate by the performer. Pressure will be monitored using Measuring and Test Equipment (M&TE) pressure gauges installed at existing system vent, drain, and test valves in conjunction with instrument test connections. Steps are included in 0-STI-67.009 for the installation and removal of the M&TE required for data acquisition.

Flow and pressure will be monitored at individual components included on ERCW branch headers in conjunction with adjusting the respective throttle valve to obtain data used to determine coefficient of flow. Flow coefficients will then be utilized by Design Engineering to benchmark the new model and reduce uncertainties. This will allow the new model to more accurately predict ERCW margins in support of the UHS temperature increase.

0-STI-67.009 will obtain the necessary pressure/flow data for the following equipment on the A-Train of ERCW:

1. CCS HX A and B
2. MCR Chiller A
3. SDBR Chiller A
4. Electric Board Room Chiller A
5. DG 1A
6. DG 2A
7. Engineered Safety Feature (ESF) Header 1A
8. ESF Header 2A
9. LCC Header 1A
10. LCC Header 1C
11. LCC Header 2A
12. LCC Header 2C
13. Upper Compartment Cooler Header 1A
14. Upper Compartment Cooler Header 2A

Each component/header listed above will be tested individually with the A Train in normal operation. At the conclusion of each header/component test, the header/components TCVs, throttle valves, motor operated valves (MOVs), etc. will be returned to their normal position before proceeding to the next Attachment in 0-STI-67.009 and testing another component/header. The throttle valves associated with this TI are normally locked in their throttle position as required by 0-TI-31.08. When these valves are unlocked and taken to a more open position, the Train is placed in an unanalyzed condition in which the Train may not be able to provide all users required design flows in all accident scenarios. Multiple multiflow runs were done during the preparation of this STI. These runs indicate the majority of users will receive their design flows with the bounding test of a CCS HX Outlet valve wide open. Furthermore, this test will be completed in May 2017 and river temperatures will be much colder than the design temperature of 85 °F and less flow will be required to all users due to this margin. However, extensive analysis would be required to state that the Train is operable throughout the entire duration of this STI. Therefore, TS LCO 3.7.8 Condition A (One ERCW Train Inoperable) will be entered during the test. TS LCO 3.7.8 requires entry into TS LCO 3.8.1 Condition C (two DGs in a train Inoperable). Depending on the mode of operation, TS LCO 3.7.8 may also require entry into TS LCO 3.4.6 (RCS Loops - Mode 4).

0-STI-67.009 will be tested over the course of an A-Train work week and will only be run on dayshift. To ease the burden on Operations, TS LCO 3.7.8 Condition A and TS LCO 3.8.1 Condition C will be entered at the start of dayshift and will be exited at the conclusion of the day when the last Appendix of the procedure for the day is complete and all valve positions have been placed in their as designed positions. This will be repeated each day until all Appendices

have been completed and this is expected to take six days. Note that other TS LCOs may require entry due to SSC alignments (e.g. remove MCR chiller from service). These are detailed in the discussion for each procedure Appendix below.

To obtain the necessary data, the following configurations will be made on the equipment noted above. Again, only one component/header (each Attachment) will be tested at a time even though multiple components/headers are discussed together below. No testing will be completed on the B Train which will ensure the B Train remains fully operable during performance of this test instruction.

1. CCS HX A and B (Attachment 1 of 0-STI-67.009)

With two A train pumps in operation, the outlet of the CCS HXs A and B will be ensured to be in the normal alignment with 1/2-FCV-67-146 closed and flow through the bypass lines via 1/2-FCV-67-143. Flow will then be recorded through the bypass line. Then, simultaneously 1/2-FCV-67-146 will be taken to POS A and 1/2-FCV-67-143 will be closed. This is the intermediate position for 1/2-FCV-67-146 that was set during dual unit flow balance, and then data will be recorded. 1/2-FCV-67-146 will then be taken to POS B (slightly more open than POS A) and data will be recorded. 1/2-FCV-67-146 will then be taken FULL open and data will be recorded in this alignment. Once flow is recorded, the valves will be returned to their normal alignment.

During this evolution, there could be variations in the temperature of the CCS, which could potentially affect reactivity and Spent Fuel Pool Cooling temperature. Reactivity and Spent Fuel Pool Cooling will be monitored for potential impact as discussed in the Precautions and Limitations of 0-STI-67.009.

2. MCR Chiller A (Attachment 2 of 0-STI-67.009)

The MCR Chiller A will be removed from service by taking 0-HS-31-8OCB to the OFF position. Prior to removing the chiller from service, Operations will evaluate the entry into TS 3.7.11 (Control Room Emergency Air Temperature Control) with only the B MCR Chiller operable. Once the MCR A Chiller is removed from service, 0-TCV-67-1051 (MCR A/C Chiller A-A ERCW Return Temperature Control Valve) will be opened and data will be recorded. Then, 0-TCV-31-604A (MCR Chiller A-A Compressor Oil Cooler Water Regulator) will be opened and data will be recorded. The TCVs will be returned to their normal position with a MCR Chiller OFF. Then 0-HS-31-80CB will be placed in the ON position which enables the MCR Chiller A auto-start feature and may allow exiting TS LCO 3.7.11, if previously entered.

3. SDBR Chiller A (Attachment 3 of 0-STI-67.009)

The SDBR Chiller A will be removed from service with Operations evaluating the need for entry into TRM 3.7.5 (Area Temperature Monitoring). 1-TCV-67-158 (A-A Shutdown Board NC Temperature Control) will be opened and data will be recorded. Then throttle valve 1-THV-67-555 will be unlocked and opened. Data will be recorded, then the valves and chiller will be returned to their normal alignment.

4. Electric Board Room Chiller A (Attachment 4 of 0-STI-67.009)

The Electric Board Room (EBR) Chiller A will be removed from service with Operations evaluating the need for entry into TRM 3.7.5 (Area Temperature Monitoring). 0-TCV-67-1050 (EBR Condenser ERCW Return Temperature Control) will be opened and data will be recorded. Then 0-TCV-31-504A (EBR Chiller Compressor Oil Cooler Water Regulator) will be opened and data will be recorded. The TCVs will be returned to their normal position with EBR Chiller OFF.

The chiller controls will be returned to ON which will enable the EBR Chiller auto start feature which may allow exiting TRM 3. 7 .5 if previously entered.

5/6. DGs 1A and 2A (Attachments 5 and 6 of 0-STI-67.009)

The 1A2 and 2A2 DGs supply header isolation valves (1/2-FCV-67-66) will be opened and data will be recorded. Then the throttle valves (1/2-THV-67-515A and 1/2-THV-67-8020) associated with these HXs will be unlocked and opened. Data will be recorded and all valves will be returned to their normal alignment.

7/8. ESF Headers 1A/2A (Attachments 7 and 8 of 0-STI-67.009)

The Flow Control Valve (FCV)s noted below for each header will be failed open and data will be recorded. Then, every throttle valve on this header will be unlocked and FULLY opened. Data will be recorded and all throttle valves will be returned to their normal locked position and the FCVs will be returned to their normal alignment.

ESF 1A Header	
1-FCV-67-184	CSP ROOM COOLER 1A-A ERCW SUP FLOW CNTL (A7U)
1-FCV-67-176	SIP ROOM COOLER 1A-A ERCW SUP FLOW CNTL (A7V)
1-FCV-67-346	PENT ROOM CLR 1A 1 ERCW SUP FLOW CNTL (A4V)
1-FCV-67-342	PIPE CHASE COOLR 1A-A ERCW SUP FLOW CNTL (A1U)
1-FCV-67-162	CCS/AFW PMP SPACE CLR 1A-A ERCW SUP FLOW CNTL (A3S)
1-FCV-67-350	PENT ROOM CLR 1A2 ERCW SUP FLOW CNTL (A2V)
1-FCV-67-354	PENT ROOM CLR 1A3 ERCW SUP FLOW CNTL (A4U)
1-FCV-67-213	SFP/TBBP SPACE CLR 1A ERCW SUP FLOW CNTL (A5W)

ESF 2A Header	
2-FCV-67-184	CSP ROOM COOLER 2A-A ERCW SUP FLOW CNTL (A9U)
2-FCV-67-176	SIP ROOM COOLER 2A-A ERCW SUP FLOW CNTL (A9V)
2-FCV-67-346	PENT ROOM CLR 2A1 ERCW SUP FLOW CNTL (A11V)
2-FCV-67-342	PIPE CHASE COOLR 2A-A ERCW SUP FLOW CNTL (A15U)
2-FCV-67-217	CCS/AFW PMP SPACE CLR 2A-A ERCW SUP FLOW CNTL (A15S)
2-FCV-67-350	PENT ROOM CLR 2A2 ERCW SUP FLOW CNTL (A14V)
2-FCV-67-354	PENT ROOM CLR 2A3 ERCW SUP FLOW CNTL (A12U)
2-FCV-67-336	SFP/TBBP SPACE CLR 2A ERCW SUP FLOW CNTL (A12W)

9/10/11 /12. - LCC Headers (Attachments 9-12 of 0-STI-67.009)

During each loop's test, the TCV for the RCP Motor Cooler will be verified OPEN and the TCVs for the CRDM and LCC will be FAILED open and data will be recorded. Then the 3 throttle valves for the RCP Motor Cooler, CRDM Cooler, and LCC will be unlocked and FULLY opened. Data will be taken and then the throttle valves will be taken back to their normal locked positon and the TCVs will be taken to their normal position.

During this evolution, the containment average mass temperature may change and other local temperatures In containment (i.e. Pressurizer Doghouse) can be expected to change also. Operations will be able to operate the opposite train coolers to control containment temperatures, if required. Control of the opposite train can be accomplished by existing procedures.

13/14. - Upper Compartment Cooler (UCC) Headers 1A and 2A- (Attachments 13-14 of 0-STI-67.009)

During each header's test, the TCVs for the two A Train UCCs will be failed open and data will be taken. Then the two throttle valves for the UCCs (1A and 1C or 2A and 2C) will be unlocked and FAILED open. Data will be recorded in this alignment, then the throttle valves will be returned to their normal locked position and the TCVs will be returned to normal.

Summary of Evaluation

ERCW is provided with two 100% redundant trains. This test is only obtaining data on the A-Train of ERCW and no testing will be completed on B Train by this procedure. While flow will be increased through specific headers/components and require the appropriate LCOs to be entered, this test does not impact the operability on the redundant train which will be capable of performing its design function and can mitigate any accident described in the UFSAR. Furthermore, the durations of the test (when trains are inoperable) are of short duration and the probability of a OBA during these alignments is minimal. Also, the alignments made to the A-Train of ERCW are not intrusive to the system boundary. The alignments made consist of operating handswitches, and manually opening TCVs, FCVs, and throttle valves. The A-Train can be returned to operable status in a timely manner should, in the unlikely scenario the B Train is unable to perform its design function.

The proposed change does not increase the frequency of an accident, introduce a new malfunction, introduce a new accident, increase the consequences from a design basis accident, or exceed/alter a design basis limit for a fission product barrier.

21. EVALUATION: 0-STI-67.010 REV. 0, EVALUATION R0

WBN is currently implementing a project to increase TS 3.7.9, "Ultimate Heat Sink (UHS)," maximum temperature limit from the current value of $\leq$85°F to $\leq$88°F. Part of the effort is to replace the existing ERCW flow model currently used to predict and verify system operation with an updated model.

Data previously taken during the dual unit flow balancing of ERCW will be utilized for the benchmarking effort. However, the dual unit flow balances performed during Unit 2 startup did not include the extent of pressure data needed for model benchmarking. The purpose of 0-STI-67.010 is to obtain additional component flow and pressure data from the ERCW Train B during normal plant operation. This is a new procedure that is being developed for a one-time performance to obtain the necessary data. Flow rates will primarily be monitored using ultrasonic flow measurement devices, although the use of differential pressure gauges will be allowed, as deemed appropriate by the performer. Pressure will be monitored using M&TE pressure gauges installed at existing system vent, drain, and test valves in conjunction with instrument test connections. Steps are included in 0-STI-67.010 for the installation and removal of the M&TE required for data acquisition.

Flow and pressure will be monitored at individual components included on ERCW branch headers in conjunction with adjusting the respective throttle valve to obtain data used to determine coefficient of flow. Flow coefficients will then be utilized by Design Engineering to benchmark the new model and reduce uncertainties. This will allow the new model to more accurately predict ERCW margins in support of the UHS temperature increase.

0-STI-67.010 will obtain the necessary pressure/flow data for the following equipment on the B-Train of ERCW:

1. CCS Heat Exchanger C
2. MCR Chiller B
3. SDBR Chiller B
4. Electric Board Room Chiller B
5. DG 1 B
6. DG 2B
7. ESF Header 1 B
8. ESF Header 2B
9. LCC Header 1B
10. LCC Header 1D
11. LCC Header 2B
12. LCC Header 2D
13. UCC Header 1B
14. UCC Header 2B

Each component/header listed above will be tested individually with the B Train in normal operation. At the conclusion of each header/component test, the header/components TCVs, throttle valves, MOVs, etc. will be returned to their normal position before proceeding to the next Attachment in 0-STI-67.010 and testing another component/header. The throttle valves associated with this STI are normally locked in their throttle position as required by 0-TI-31.08. When these valves are unlocked and taken to a more open position, the Train is placed in an unanalyzed condition in which the Train may not be able to provide all users required design flows in all accident scenarios. Multiple multlflow runs were done during the preparation of this STI. These runs indicate the majority of users will receive their design flows with the bounding test of a CCS HX Outlet valve wide open. Furthermore, this test will be completed in May and river temperatures will be much colder than the design temperature of 85°F and less flow will be required to all users due to this margin. However, extensive analysis would be required to state that the Train is operable throughout the entire duration of this STI. Therefore, LCO 3.7.8 Condition A (one ERCW Train Inoperable) will be entered during the test. LCO 3.7.8 requires entry into LCO 3.8.1 Condition C (two DGs in a Train Inoperable). Depending on the mode of operation. LCO 3.7.8 may also require entry into LCO 3.4.6, RCS Loops - Mode 4.

0-STI-67.010 will be tested over the course of a B-Train work week and will only be run on dayshift. To ease the burden on Operations, LCO 3.7.8 Condition A and LCO 3.8.1 Condition C will be entered at the start of dayshift and will be exited at the conclusion of the day when the last Appendix of the day is complete and all components have been placed in their as designed positions. This will be repeated each day until all Appendices have been completed and this is expected to take 6 days. Note that other LCOs may require entry due to SSC alignments (e.g. remove MCR chiller from service). These are detailed in the discussion for each Appendix below.

To obtain the necessary data, the following configurations will be made on the equipment noted above. Again, only one component/header (each Attachment) will be tested at a time even though multiple components/headers are discussed together below. No testing will be completed on the A Train which will ensure the A Train remains fully operable during performance of this test instruction.

1. CCS HX C (Attachment 1 of 0-STI-67.010)

With two B train pumps in operation, the outlet of the CCS HX C will be ensured to be in the normal alignment with 0-FCV-67-152 closed and flow through the bypass lines via 0-FCV-67-144. Flow will then be recorded through the bypass line. Then, simultaneously 0-FCV-67-152

will be taken to POS A and 0-FCV-67-144 will be closed. This is the intermediate position for 0-FCV-67-152 that was set during dual unit flow balance, and then data will be recorded. 0-FCV-67-
152 will then be taken to POS B (slightly more open than POSA) and data will be recorded. 0-FCV-67-152 will then be taken full open and data will be recorded in this alignment. Once flow is recorded, the valves will be returned to their normal alignment.

During this evolution, there could be variations in the temperature of the CCS, which could potentially affect reactivity and Spent Fuel Pool Cooling temperature. Reactivity and Spent Fuel Pool Cooling will be monitored for potential impact as discussed in the Precautions and Limitations of 0-STI-67.010.

2. MCR Chiller B (Attachment 2 of 0-STI-67.010)

The MCR Chiller B will be removed from service by taking 0-HS-31-96CB to the OFF position. Prior to removing the chiller from service, Operations will evaluate the entry into TS 3.7.11 (Control Room Emergency Air Temperature Control) with only the A MCR Chiller operable. Once the MCR B Chiller is removed from service, 0-TCV-67-1053 (MCR A/C Chiller B-B ERCW Return Temperature Control Valve) will be opened and data will be recorded.
Then, 0-THV-67-623B will be unlocked and taken FULLY opened and data will be obtained.
Then, 0-TCV-31-604B (MCR Chiller B-B Compressor Oil Cooler Water Regulator) will be opened and data will be recorded. The TCVs will be returned to their normal position with a MCR Chiller OFF. Then 0-HS-31-96CB will be placed in the ON position which enables the MCR Chiller B auto-start feature and may allow exiting TS LCO 3.7.11, if previously entered.

3. SDBR Chiller B (Attachment 3 of 0-STI-67.010)

The SDBR B will be removed from service with Operations evaluating the need for entry into TRM 3.7.5 (Area Temperature Monitoring). 2-TCV-67-158 (B-B Shutdown Board A/C Temperature Control) will be opened and data will be recorded. Then, 2-TCV-67-158 and the chiller will be returned to their normal alignment which may allow exiting TRM 3.7.5, if previously entered.

4. Electric Board Room Chiller B (Attachment 4 of 0-STI-67.010)

The Electric Board Room Chiller B will be removed from service with Operations evaluating the need for entry into TRM 3.7.5 (Area Temperature Monitoring). 0-TCV-67-1052 (Electric Board Room Condenser ERCW Return Temperature Control) will be opened and data will be recorded. Then 0-TCV-31-504B (EBR Chiller Compressor Oil Cooler Water Regulator) will be opened and data will be recorded. The TCVs will be returned to their normal position with EBR Chiller OFF. The chiller controls will be returned to ON which will enable the EBR Chiller auto start feature which may allow exiting TRM 3.7.5 if previously entered.

5/6. DGs 1B and 2B (Attachments 5 and 6 of 0-STI-67.010)

The 182 and 202 DGs' supply header isolation valves (1/2-FCV-67-67) will be opened and data will be recorded. Then the throttle valves (1/2-THV-67-510B, 1/2-THV-515B, and 1/2-THV-67-8020) associated with these HXs will be unlocked and opened. Data will be recorded and all valves will be returned to their normal alignment.

7/8. ESF Headers 1B/2B (Attachments 7 and 8 of 0-STI-67.010)

The FCVs noted below for each header will be failed open and data will be recorded. Then every throttle valve on this header will be unlocked and FULLY opened. Data will be recorded and all throttle valves will be returned to their normal locked position and the FCVs will be returned to their normal alignment.

ESF 1B Header	
1-FCV-67-186	CSP ROOM COOLER 1B-B ERCW SUP FLOW CNTL (A7U)
1-FCV-67-182	SIP ROOM COOLER 1B-B ERCW SUP FLOW CNTL (A7V)
1-FCV-67-348	PENT ROOM CLR 1B-B ERCW SUP FLOW CNTL (A4V)
1-FCV-67-344	PIPE CHASE COOLR 1B-B ERCW SUP FLOW CNTL (A2U)
1-FCV-67-164	CCS/AFW PMP SPACE CLR 1B-B ERCW SUP FLOW CNTL (A3T)
1-FCV-67-352	PENT ROOM CLR 1B-B ERCW SUP FLOW CNTL (A2V)
1-FCV-67-356	PENT ROOM CLR 1B-B ERCW SUP FLOW CNTL (A4V)
1-FCV-67-215	SFP/TBBP SPACE CLR 1B-B ERCW SUP FLOW CNTL (A5W)

ESF 2B Header	
2-FCV-67-186	CSP ROOM COOLER 2B-B ERCW SUP FLOW CNTL (A9U)
2-FCV-67-182	SIP ROOM COOLER 2B-B ERCW SUP FLOW CNTL (A9V)
2-FCV-67-348	PENT ROOM CLR 2B-B ERCW SUP FLOW CNTL (A12V)
2-FCV-67-344	PIPE CHASE COOLR 2B-B ERCW SUP FLOW CNTL (A14U)
2-FCV-67-219	BA XFER/AFW PMP SPACE CLR 2B-B ERCW SUP FLOW CNTL (A15T)
2-FCV-67-352	PENT ROOM CLR 2B-B ERCW SUP FLOW CNTL (A13V)
2-FCV-67-356	PENT ROOM CLR 2B-B ERCW SUP FLOW CNTL (A12V)
2-FCV-67-338	EGTS ROOM COOLER 2A ERCW SUP FLOW CNTL (A11W)

9/10/11/12. - LCC Headers (Attachments 9-12 of 0-STI-67.010)

During each loop's test, the TCV for the RCP Motor Cooler will be verified open and the TCVs for the CRDM and LCC will be FAILED open and data will be recorded. Then the three throttle valves for the RCP Motor Cooler, CROM Cooler, and LCC will be unlocked and FULLY opened. Data will be taken and then the throttle valves will be taken back to their normal locked positon and the TCVs will be taken to their normal position.

During this evolution, the containment average mass temperature may change and other local temperatures in containment (i.e. Pressurizer Doghouse) can be expected to change also. Operations will be able to operate the opposite train coolers to control containment temperatures, if required. Control of the opposite train can be accomplished by existing procedures.

13/14. - UCC Headers 18 and 28 - (Attachments 13-14 of 0-STI-67.010)

During each header's test, the TCVs for the two B Train UCCs will be failed open and data will be taken. Then the two throttle valves for the UCCs (1 B and 1D or 2B and 2D) will be unlocked and FAILED open. Data will be recorded in this alignment, then the throttle valves will be returned to their normal locked position and the TCVs will be returned to normal.

Summary of Evaluation:

ERCW is provided with two 100% redundant trains. This test is only obtaining data on the B-Train of ERCW and no testing will be completed on A Train by this procedure. While flow will be increased through specific headers/components and require the appropriate LCOs to be entered, this test does not impact the operability on the redundant train which will be capable of performing its design function and can mitigate any accident described in the UFSAR. Furthermore, the durations of the test (when trains are inoperable) are of short duration and the probability of an OBA during these alignments is minimal. Also, the alignments made to the B-Train of ERCW are not intrusive to the system boundary. The alignments made consist of operating handswitches, and manually opening TCVs, FCVs, and throttle valves. The B-Train can be returned to operable status in a timely manner should, in the unlikely scenario, the A Train is unable to perform Its design function.

The proposed change does not increase the frequency of an accident, introduce a new malfunction, introduce a new accident, increase the consequences from a design basis accident, or exceed/alter a design basis limit for a fission product barrier.

22. EVALUATION: TI-65 REV. 27, EVALUATION R0

WBN utilizes technical instruction, TI-65 Breaching the Containment Annulus, ABSCE, or MCRHZ Pressure Boundaries, to control number and size of various ventilation boundary breaches. This procedure contains detailed steps to track and quantify the cumulative breach area for the various ventilation boundaries and requires the cumulative breach area be maintained less than the available breach margin. For ABSCE the available margin is determined by ABGTS fan performance surveillance tests results (0-SI-30-7-A and 0-SI-30-7-B). This evaluation will review modifying the method of controlling the ABSCE breaches. Specifically, Rev 27 to TI-65 will allow for actual cumulative area breach to exceed the maximum available, provided manual actions can be taken to restore the actual breach area to less than the available breach margin. This administrative control process will be applicable to ABSCE breaches which exceed the available breach margin and will ensure the integrity of the ABSCE boundary is established within three minutes of ABI demand so that a -0.25 inch water gauge pressure can be obtained within the ABSCE bounded areas of the Auxiliary Building within the 4 minutes required (for an ABI originated by a LOCA).

This administrative control process will require dedicated non-Control Room personnel staffing to be present within the MCR. This individual will be responsible for notifying separate, dedicated field personnel of receipt of an ABI alarm in the MCR The dedicated field individual will have sole responsibility for restoring the breach. Communications systems used for this notification will be suitable to allow for $\leq$ one minute response time from ABI indication in the MCR to field individual being notified of closure demand (e.g. radio, pager or phone). A single individual may perform the notification action for multiple ABSCE breaches under administrative control, provided the communication system contains a common mode of notification (e.g. pager system or radios on the same frequency).

These activities do not implement any permanent changes to existing permanent plant SSCs subject to design configuration control management. However, because the compensatory actions invoked by this procedure revision involve manual operator actions in lieu of relying upon passive means for establishing the ABSCE barrier, this revision was determined to be adverse to a UFSAR-described design function. Additionally, the changes covered in this procedure revision result in changes to the manner in which ABSCE boundary integrity is established, as compared to descriptions presented in the UFSAR As a result, this procedure revision is subject to further review by performing a 10 CFR 50.59 Evaluation. Furthermore, this administrative control process is consistent with Westinghouse Standard Technical Specification.

Summary of Evaluation:

Revision 27 to TI-65 "Breaching the Containment Annulus, ABSCE, or MCRHZ Pressure Boundaries" authorizes the use an administrative measure to control ABSCE boundary breaches which exceed tested limits. This administrative control process will ensure the manual actions required, their completion times and post modification testing, will restore the boundary to below tested limits in the action times required to ensure that ABSCE in leakage sufficiently low to keep the dose contributions at the site boundary and to the Low Population Zone (LPZ) within 10 CFR 100 guidelines. Based on review of the 50.59 evaluation questions this change has been determined to be acceptable under the current license.

23. EVALUATION: WCAP-17834-P REV. 1, EVALUATION R1

WBN Unit 1 currently uses the WCAP-10325-P-A methodology as the UFSAR-described analysis to predict the mass and energy releases from a design basis LOCA. The methodology is also used to determine the peak pressure resulting from the accident to assure containment integrity. Several errors were recently discovered in WCAP-10325-P-A that, when corrected, resulted in increasing the calculated peak pressure. These errors could have been offset via the addition of a significant quantity of ice to the ice condenser; however, the analysis also needed to account for the performance of heat removal systems that would soon be shared with Unit 2 upon its licensure and subsequent startup.

To meet these needs, WBN Unit 1 proposes adopting the WCAP-17834-P, "Watts Bar Unit 1 WCOBRA/TRAC Long Term M&E and Containment Integrity Analysis" to support the UFSAR's description and assurances for the containment functional design. WCAP-17834-P-A is an engineering report that calculates the LOCA mass and energy releases and peak pressure using the WCAP-17721-P-A (WCOBRA/TRAC) methodology, which is a significantly more mechanistic model. WCAP-17721-P-A predicts an acceptable peak pressure with no changes in initial ice mass, even under the consideration of sharing the heat removal systems between two units.

The post-accident temperature and pressure profiles predicted using the WCAP-17721-P-A methodology for the containment harsh environments were not completely bounded by the previous design basis profiles; therefore, the adoption of WCAP-17721-P-A as the LOCA containment integrity design basis results in the creation of new profiles to which safety-related equipment in these harsh environments must be qualified.

Summary of Evaluation:

The design function of primary containment is to assure that an acceptable upper limit of leakage of radioactive material is not exceeded under design basis accident conditions. The design function of the containment sump is to provide a water source for ECCS and containment spray. The use of WCAP-17721-P-A is solely a methodology change and does not add, remove, or modify any SSCs or procedures. It does not constitute a test or experiment, and it poses no impact to the plant's Technical Specifications. Because the current LOCA mass and energy releases and resulting containment pressure are calculated using a methodology explicitly described in the UFSAR in Section 6.2.1.3, the use of WCAP-17721-P-A is a change in a method of evaluation used to establish the design basis as part of the safety analysis. In addition, it predicts different post-accident temperature profiles for the containment harsh environments that could impact the qualification of safety-related equipment in these spaces.

The NRC generically approved WCAP-17721-P-A for reference in license basis applications for the large-break LOCA mass and energy release calculations in an SER issued August 24, 2015 (retrievable via ADAMS# ML 15221A007). The specific use of WCAP-17721-P-A to generate the WCAP-17834-P engineering report for WBN Unit 1 satisfied all the limitations and conditions stipulated by the SER. Therefore, the NRC has approved this change to a new evaluation methodology to be used in the UFSAR to establish the design basis or safety analyses as defined by NEI 96-07 Revision 1, Section 3.4.

The changes to the post-accident parameter profiles incurred by crediting the WCAP-17834-P engineering report do not adversely affect the environmental qualification of any safety-related equipment. As such, it does not result in an increase in the frequency of an UFSAR-evaluated accident or malfunction, an increase in the consequences of an accident or malfunction, or create a different type of accident or malfunction than previously evaluated in the UFSAR. The new methodology demonstrates there are no fission product barrier design basis limits being exceeded or altered.

24. EVALUATION: COMP MEASURES FOR CR 1179264 PDO, EVALUATION R0

Condition Report (CR) 1179264 was initiated to determine WBN's applicability to the potential design vulnerability concern for Emergency Diesel Generators (EDG) during postulated design basis tornado event. There is potential vulnerability concern for the EDGs ability to start during a design basis tornado due to a postulated pressure drop in the EDG room and locking out the EDG while in "STBY" on crankcase over-pressure (setpoint of 1 inch of H_2O). This condition could occur on all four EDGs simultaneously. The potential consequence of this condition is that the EDGs could be locked out and prevented from starting during a design basis tornado event, which would prevent the EDGs from providing power to the shutdown boards upon a subsequent loss of offsite power.

The proposed change to alleviate this vulnerability is to modify the 0-AOI-8 procedure. Upon notification of a Tornado Warning, the operators will initiate an emergency start of the EDGs using WBN-1-HS-082-0015 or WBN-2-HS-082-0015 (Diesel Generator Emergency Start Switch). This ensures the EDGs are running and bypassing the vulnerability of the system to false trips of the EDG crankcase pressure detectors.

Summary of Evaluation:

The design function of the SDG System (described in the UFSAR as the Standby AC Power System) is to supply power to permit functioning of components and systems required to assure that (1) fuel design limits and reactor coolant pressure boundary (RCPB) design conditions are not exceeded due to anticipated operational occurrences, and {2) the core is cooled and vital functions are maintained in event of a postulated accident, subject to loss of the preferred power system and subject to any single failure in the standby power system.

Emergency starting the EDGs ensures the capability of supplying power to the ESF equipment required to safely mitigate the design basis tornado and loss of offsite power (LOOP) event. By performing these actions, no malfunction or accident of a different type is created and the consequences of the accident are limited to that of a postulated single failure, which is already analyzed in the UFSAR. The new operator actions do not induce the likelihood of any malfunction that would prevent the EDGs from performing their design function. There are no subsequent threats to the design limits of any of the three fission product barriers as a result of this change.

25. EVALUATION: DIASBLED ALARM 2-XA-55-5B-95F OPDP-4, EVALUATION R0

CR 1171424 was initiated to generate a WO to inhibit the 95-F alarm input from Loose Part Monitoring System (LPMS) Channels 101 and 110. This CR also documents that LPMS Channel 102 has extremely low background noise and that the channel may or may not be functioning.

It has been decided to inhibit the 95-F alarm inputs from the LPMS Channels 101, 102, and 110 due to the following problems:

1. Channel 101 (Reactor (Rx) Vessel Lower, 2-LPX-052-0101) is generating multiple alarms.
2. Channel 102 (SG No. 1, 2-LPX-052-0102) is damaged and is not operating properly (low output).
3. Channel 110 (Rx Vessel Upper, 2-LPX-052-0110) is damaged and is not operating properly (incorrect bias voltage).

Items 1 and 3 are generating nuisance alarms and item 2), although not generating nuisance alarms at this time, has the potential to do so. These three channels will therefore be placed in disabled status using the built in features of the software in the system rack 2-R-188. The disabled status for these channels will prevent alarms going to annunciator 2-XA-55-58, Window 95F - "RCS LOOSE PARTS DETECTED" in the MCR.

The LPMS is not described in Chapter 6 or 15 of the UFSAR and is not credited in design basis accidents. The LPMS is not a Class 1 E system. This proposed change will not affect the LPMS seismic Category I(L) functions.

UFSAR Section 7.6.7 describes the LPMS as having redundant channels. A functional channel Is presently available for each monitored parameter. However, with the defective channels disabled the UFSAR described Power Ascension Test can not be completed as described in Chapter 14 of the UFSAR. Therefore a 50.59 evaluation is required.

Summary of Evaluation:

All questions of the 50.59 evaluation were evaluated and answered "NO." The LPMS performs a monitoring function and does not provide any actuation circuitry function. The LPMS is not credited for design basis accidents. The LPMS presently has a functional redundant channel available for each monitored region. One or more loose-Part Detection System channels inoperable for greater than 30 days would require compliance with Technical Requirements Manual 3.3.6 and be documented in the corrective action program. This proposed change will not affect the LPMS seismic Category I(L) functions.

Disabling the nuisance alarms will ensure that an actual loose parts event is not masked by continuous nuisance alarms.