TENNESSEE VALLEY AUTHORITY

1101 Market Street, Chattanooga, Tennessee 37402

CNL-23-036

December 18, 2023

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

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: **Application to Revise Function 5 of Technical Specification Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation," for the Sequoyah Nuclear Plant and Watts Bar Nuclear Plant (SQN-TS-23-02 and WBN-TS-23-08)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, “Application for amendment of license, construction permit, or early site permit,” Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License Nos. DPR-77 and DPR-79 for the Sequoyah Nuclear Plant (SQN), Units 1 and 2; and Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN), Units 1 and 2, respectively.

The proposed license amendment would add the following note to SQN Units 1 and 2 and WBN Units 1 and 2 Technical Specification (TS) 3.3.2, “Engineered Safety Feature Actuation System (ESFAS) Instrumentation,” Table 3.3.2-1, Functions 5a and 5b, “Turbine Trip and Feedwater Isolation”:

> “Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.”

The proposed change also revises Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b to be consistent with Note (i) of SQN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (j) of SQN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b and the corresponding Note and Table in Westinghouse Standard TS (NUREG-1431, Revision 5.0).

The enclosure to this submittal provides a description and assessment of the proposed change, a regulatory evaluation, and a discussion of environmental considerations. Attachment 1 provides a marked-up version of the affected TS pages of SQN Units 1 and 2

showing the proposed changes. Attachment 2 provides a marked-up version of the affected TS pages of WBN Units 1 and 2 showing the proposed changes. Attachment 3 provides a marked-up version of the SQN Units 1 and 2 TS Bases. Attachment 4 provides a marked-up version of the WBN Units 1 and 2 TS Bases. Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program.

TVA requests approval of the proposed license amendment within one year from the date of this submittal with implementation within 60 days of issuance of the amendment.

TVA has determined that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). In accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosure to the Tennessee State Department of Environment and Conservation.

There are no new regulatory commitments contained in this letter. Please address any questions regarding this request to Stuart L. Rymer, Senior Manager, Fleet Licensing, at slrymer@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 18th day of December 2023.

Respectfully,

Kimberly D. Hulvey

Digitally signed by Edmondson, Carla
Date: 2023.12.18 09:54:03 -05'00'

Kimberly D. Hulvey
Director, Nuclear Regulatory Affairs

Enclosure: Description and Assessment of the Proposed Change

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Sequoyah Nuclear Plant
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
NRC Project Manager - Sequoyah Nuclear Plant
NRC Project Manager - Watts Bar Nuclear Plant
Director, Division of Radiological Health - Tennessee Department of Environment and Conservation

Enclosure

Description and Assessment of the Proposed Change

Subject: Application to Revise Function 5 of Technical Specification Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation," for the Sequoyah Nuclear Plant and Watts Bar Nuclear Plant (SQN-TS-23-02 and WBN-TS-23-08)

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Enclosure

Description and Assessment of the Proposed Change

1.0 SUMMARY DESCRIPTION

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License Nos. DPR-77 and DPR-79 for Sequoyah Nuclear Plant (SQN), Units 1 and 2, and Facility Operating License Nos. NPF-90 and NPF-96 for Watts Bar Nuclear Plant (WBN), Units 1 and 2.

The proposed license amendment would add the following note to SQN Units 1 and 2 and WBN Units 1 and 2 Technical Specification (TS) 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Table 3.3.2-1, Function 5, "Turbine Trip and Feedwater Isolation":

> "Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening."

The proposed change also revises Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b to be consistent with Note (i) of SQN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (j) of SQN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b and the corresponding Note and Table in Westinghouse Standard TS (NUREG-1431, Revision 5.0).

2.0 DETAILED DESCRIPTION

2.1 System Design and Operation

The primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines, and to stop the excessive flow of feedwater into the steam generators (SGs). These functions are necessary to mitigate the effects of a high water level in the SGs, which could result in carryover of water into the steam lines and excessive cooldown of the primary system. The SG high water level is due to excessive feedwater flows.

The Turbine Trip and Feedwater Isolation Function is actuated when the level in any SG exceeds the high setpoint, and performs the following functions:

- Trips the main turbine,
- Trips the main feedwater (MFW) pumps,
- Initiates feedwater isolation, and
- Shuts the MFW regulating valves and the bypass feedwater regulating valves.

This function is actuated by SG Water Level - High, or by a safety injection (SI) signal. The nominal trip setpoint and allowable value limits are a percentage of the narrow range instrument span for each steam generator. The reactor trip system (RTS) also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken offline and the turbine generator must be tripped. The MFW system is also taken out of operation and the auxiliary feedwater (AFW) system is automatically started.

For WBN, an additional function of the Turbine Trip and Feedwater Isolation signal is to prevent submergence of safety related equipment in the main steam valve vault (MSVV) rooms in the event of a MFW line break.

Each of the two main steam chests includes two turbine stop valves and two turbine control valves. The steam lines are cross-connected upstream of the turbine stop valves. The turbine provides anticipatory trips to the reactor protection system from contacts which change position when the turbine stop valves close or when the emergency trip header pressure goes below its setpoint.

For a turbine trip, the reactor would be tripped directly (unless below approximately 50% power) from a signal derived from the turbine emergency trip header pressure or the turbine stop valve position. The turbine stop valves close on loss of emergency trip header pressure actuated by one of a number of possible turbine trip signals.

2.2 Reason for the Proposed Change

SQN and WBN TS Table 3.3.2-1, Function 5 requires two trains of the Turbine Trip Function to be operable in Mode 1 and in Modes 2 to 3 [except when all MFW isolation valves, MFW regulating valves (MFRV), and MFRV bypass valves are closed or isolated by a closed manual valve]. This function requires the four main turbine stop valves to be capable of closing within the time limit prescribed in SQN Updated Final Safety Analysis Report (UFSAR) Table 7.3.1-4, “Engineered Safety Features Response Times,” and the WBN Units 1 and 2 Technical Requirements Manuals Table 3.3.2-1, “Engineered Safety Actuations System Response Times”.

However, SQN and WBN TS 3.3.2 does not provide any specific condition/action for the turbine stop valves. Therefore, if one or more of the turbine stop valves is inoperable (e.g., fails to meet the required closure time while in Mode 1 during a pre-planned turbine trip as part of normal startup sequence), then both trains of the Turbine Trip Function must be declared inoperable, which requires entry into SQN and WBN TS Limiting Condition for Operation (LCO) 3.0.3 due to two trains inoperable with no applicable TS required action.

However, entry into LCO 3.0.3 is unnecessary if the turbine stop valves or governor valves are already closed (in the required turbine trip condition) and are incapable of opening (i.e., turbine tripped). With the proposed change to SQN and WBN TS Table 3.3.2-1, Function 5, during startup testing if a valve were to fail its time response testing, but was closed with the turbine tripped, entry into 3.0.3 would not be required. This would preclude an unnecessary mode change that could challenge plant equipment and burden the operating crews.

The proposed changes to Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b are administrative in nature in that they are consistent with Note (i) of SQN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (j) of SQN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b and Note (k) of TS Table 3.3.2-1, Functions 5a and 5b of the Westinghouse Standard TS (NUREG-1431, Revision 5.0). The proposed changes do not change the technical content of Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b. The current verbiage of Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b is the same as the initial issuance of the WBN Unit 1 TS (NRC Accession Number ML052930169) and the WBN Unit 2 TS (NRC Accession Number ML15251A587).

2.3 Description of the Proposed Change

The proposed license amendment would add the following note to SQN Units 1 and 2 and WBN Units 1 and 2 TS 3.3.2, Table 3.3.2-1, Functions 5a and 5b for Modes 1, 2, and 3:

> "Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening."

The remaining footnotes in TS 3.3.2, Table 3.3.2-1 are renumbered accordingly.

The proposed license amendment also revises Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b as follows:

> "Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve."

Attachment 1 provides a marked-up version of the affected TS pages of SQN Units 1 and 2 showing the proposed changes. Attachment 2 provides a marked-up version of the affected TS pages of WBN Units 1 and 2 showing the proposed changes. Attachment 3 provides a marked-up version of the SQN Units 1 and 2 TS Bases. Attachment 4 provides a marked-up version of the WBN Units 1 and 2 TS Bases. Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program.

3.0 TECHNICAL EVALUATION

A turbine trip signal into the digital electric hydraulics (DEH) system (Figures 1 and 2) must be present for the turbine stop and governor valves to be closed and incapable of opening. While the turbine is in the tripped state the trip block solenoid valves will de-energize and remain open removing hydraulic fluid pressure needed for valve movement. The trip block solenoid valves will energize only when all turbine trips are clear and the turbine is "latched." These actions will allow system pressure to build therefore enabling valve movement when demand is present. Therefore, the proposed change provides an adequate level of safety for the change.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements and Criteria

General Design Criteria

SQN Units 1 and 2 were designed to meet the intent of the "Proposed General Design Criteria (GDC) for Nuclear Power Plant Construction Permits published in July 1967. The Sequoyah construction permit was issued in May 1970. The Updated Final Safety Analysis Report (UFSAR), however, addresses the NRC General Design Criteria (GDC) published as Appendix A to 10 CFR 50 in July 1971.

WBN Units 1 and 2 were designed to meet the intent of the "Proposed General Design Criteria for Nuclear Power Plant Construction Permits" published in July 1967. The WBN construction permit was issued in January 1973. The dual-unit UFSAR, however, addresses the Nuclear Regulatory Commission GDC published as Appendix A to 10 CFR 50 in July 1971.

Each criterion listed below is followed by a discussion of the design features and procedures that meet the intent of the criteria.

> *Criterion 13 - Instrumentation and Control.* Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

Compliance

The proposed change will continue to provide monitoring of the Turbine Trip and Feedwater Isolation Function. No changes are proposed to the safety-related instrumentation (i.e., engineered safety features actuation system). Further compliance with GDC 13 is provided in SQN UFSAR Section 3.1.2 and WBN UFSAR Section 3.1.2.2.

> *Criterion 20 through 29, "Protection and Reactivity Control Systems,"* provides the expectations for protection systems associated with reactor operation.

Compliance

The proposed change does not alter the ability for the reactor trip functions to actuate. The proposed change is consistent with the SQN and WBN design and analysis and ensures proper actuation to satisfy the anticipatory trip function. Therefore, the recommendations of these GDC continue to be met with the proposed change. Further compliance with GDC 20 through 29 is provided in SQN UFSAR Section 3.1.2 and WBN UFSAR Section 3.1.2.3.

4.2 Precedent

There is no precedent for the proposed change.

4.3 No Significant Hazards Consideration Determination Analysis

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, “Application for amendment of license, construction permit, or early site permit,” Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License Nos. DPR-77 and DPR-79 for Sequoyah Nuclear Plant (SQN), Units 1 and 2, and Facility Operating License Nos. NPF-90 and NPF-96 for Watts Bar Nuclear Plant (WBN), Units 1 and 2.

The proposed license amendment would add the following note to SQN Units 1 and 2 and WBN Units 1 and 2 Technical Specification (TS) 3.3.2, “Engineered Safety Feature Actuation System (ESFAS) Instrumentation,” Table 3.3.2-1, Function 5, “Turbine Trip and Feedwater Isolation”:

> “Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.”

The proposed change also revises Note (f) of WBN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (h) of WBN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b to be consistent with

Note (i) of SQN Unit 1 TS Table 3.3.2-1, Functions 5a and 5b and Note (j) of SQN Unit 2 TS Table 3.3.2-1, Functions 5a and 5b and the corresponding Note and Table in Westinghouse Standard TS (NUREG-1431, Revision 5.0).

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below.

1. *Does the proposed amendment involve a significant increase in the probability or consequence of an accident previously evaluated?*

   Response: No

   The proposed change will not alter any plant components, systems, or processes and will provide a more appropriate value to assess operability of the associated pressure switches. Because the plant features and operating practices are not altered, the probability of an accident is not affected. This trip function is not directly credited in the SQN and WBN accident analysis. There is not a specific safety limit associated with the Turbine Trip and Feedwater Isolation function; therefore, the proposed change will not impact any previously evaluated design basis accidents. The proposed change will continue to provide an acceptable anticipatory trip signal, and the offsite dose potential is not affected by this change.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?*

   Response: No.

   The proposed change will not alter any plant equipment or operating practices that could create the possibility of a new or different kind of accident. The proposed change reflects that the turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening. This type of function does not have the ability to create an accident as its purpose and function is to mitigate events.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. *Does the proposed amendment involve a significant reduction in a margin of safety?*

   Response: No.

   The proposed change adds a note to SQN Units 1 and 2 and WBN Units 1 and 2 TS 3.3.2, Function 5 to indicate that the turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening. The proposed change does not alter the ability of this trip function to operate when and as needed to mitigate accident conditions.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

4.4 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Figure 1

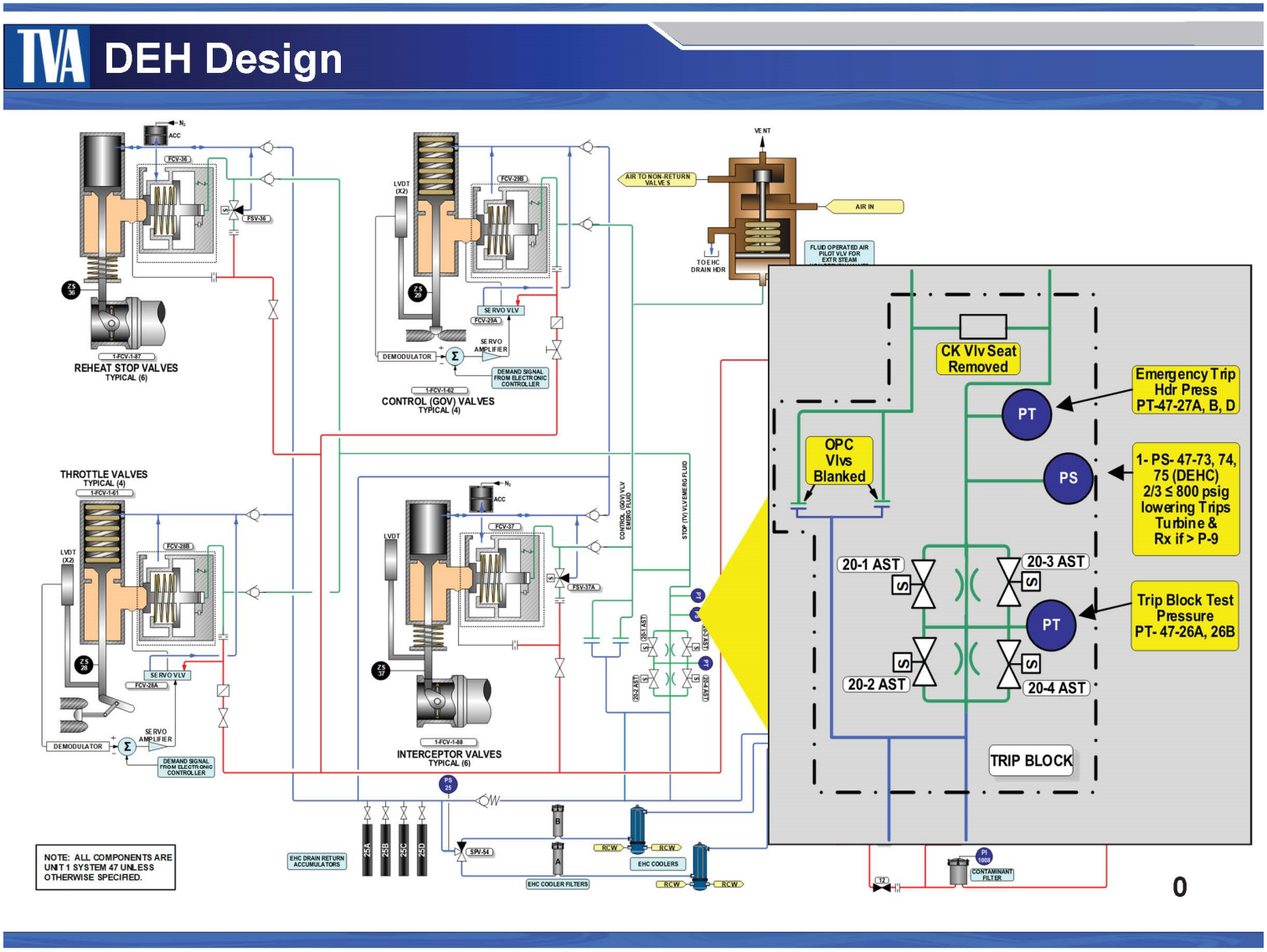
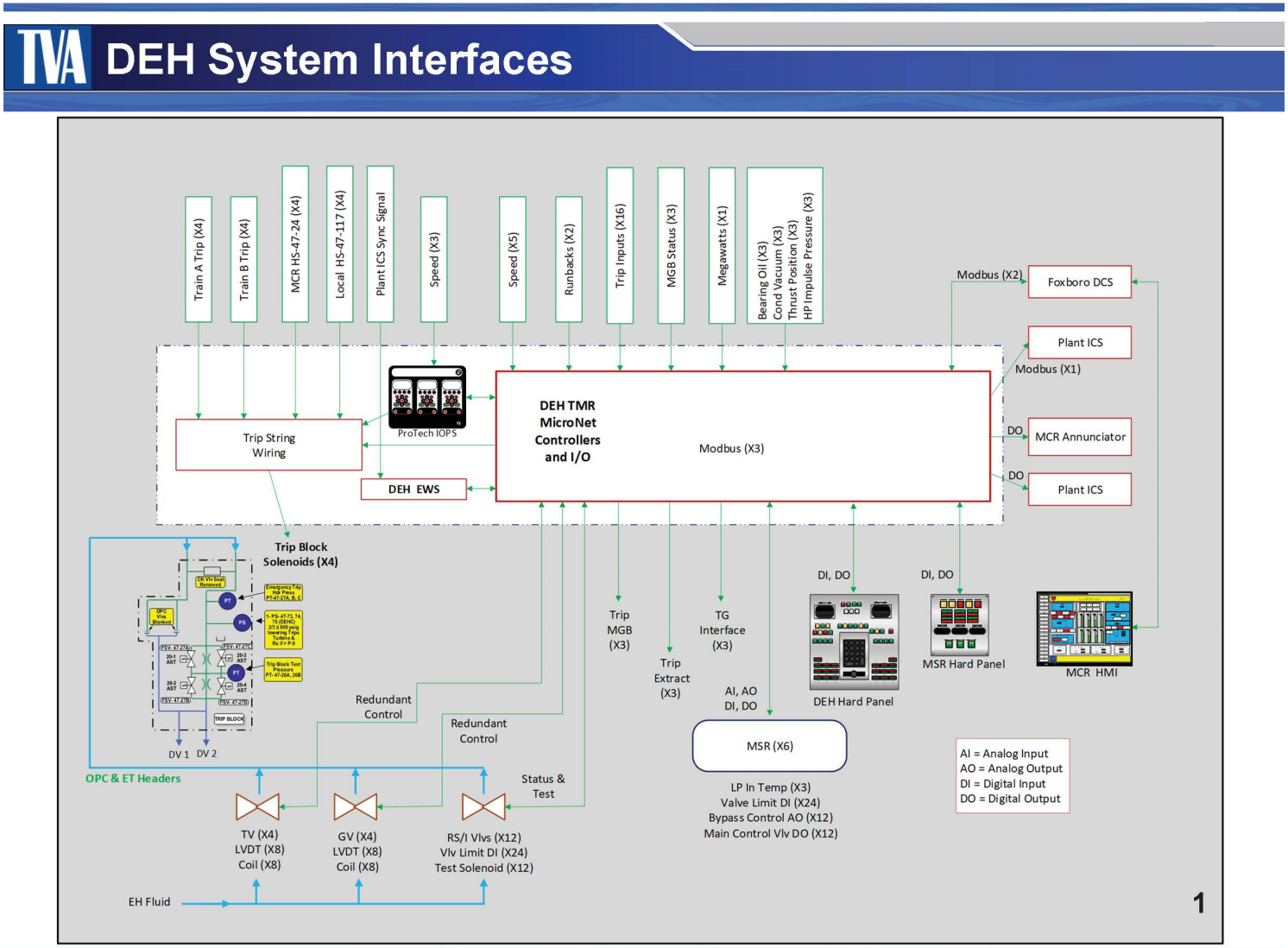

DEH Design
REHEAT STOP VALVES
TYPICAL (6)
CONTROL (GOV) VALVES
TYPICAL (4)
THROTTLE VALVES
TYPICAL (4)
INTERCEPTOR VALVES
TYPICAL (6)
CK Vlv Seat Removed
Emergency Trip Hdr Press PT-47-27A, B, D
PT
OPC Vlvs Blanked
PS
1- PS- 47-73, 74, 75 (DEHC) 2/3 ≤ 800 psig lowering Trips Turbine & Rx if > P-9
20-1 AST
20-3 AST
Trip Block Test Pressure PT- 47-26A, 26B
PT
20-2 AST
20-4 AST
TRIP BLOCK
NOTE: ALL COMPONENTS ARE UNIT 1 SYSTEM 47 UNLESS OTHERWISE SPECIFIED.
EHC DRAIN RETURN ACCUMULATORS
EHC COOLER FILTERS
EHC COOLERS
CONTAMINANT FILTER
0

Figure 2


DEH System Interfaces
Train A Trip (X4)
Train B Trip (X4)
MCR HS-47-24 (X4)
Local HS-47-117 (X4)
Plant ICS Sync Signal
Speed (X3)
Speed (X5)
Runbacks (X2)
Trip Inputs (X16)
MGB Status (X3)
Megawatts (X1)
Bearing Oil (X3)
Cond Vacuum (X3)
Thrust Position (X3)
HP Impulse Pressure (X3)
Modbus (X2)
Foxboro DCS
Plant ICS
Modbus (X1)
DO
MCR Annunciator
DO
Plant ICS
ProTech IOPS
DEH TMR MicroNet Controllers and I/O
Modbus (X3)
Trip String Wiring
DEH EWS
Trip Block Solenoids (X4)
DV 1
DV 2
OPC & ET Headers
Redundant Control
Redundant Control
Status & Test
Trip MGB (X3)
Trip Extract (X3)
TG Interface (X3)
AI, AO
DI, DO
DI, DO
DI, DO
DEH Hard Panel
MSR Hard Panel
MCR HMI
MSR (X6)
LP In Temp (X3)
Valve Limit DI (X24)
Bypass Control AO (X12)
Main Control Vlv DO (X12)
TV (X4)
LVDT (X8)
Coil (X8)
GV (X4)
LVDT (X8)
Coil (X8)
RS/I Vlvs (X12)
Vlv Limit DI (X24)
Test Solenoid (X12)
EH Fluid
AI = Analog Input
AO = Analog Output
DI = Digital Input
DO = Digital Output
1

Enclosure

Attachment 1

Proposed Technical Specification Changes (Mark-Up) for SQN Units 1 and 2

Table 3.3.2-1 (page 4 of 9)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1(j), 2(i)(j),3(i)(j)	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. SG Water Level - High High (P-14)	1(j),2(i)(j),3(i)(j)	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c) SR 3.3.2.9	≤ 81.7%	81%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and as-left tolerances are specified in UFSAR, Section 7.1.2.

(i) Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve.

(j) Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.

Table 3.3.2-1 (page 7 of 9)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater						
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power						
(1) Voltage Sensors	1,2,3	3 per shutdown board(j~~k~~)	L,M	SR 3.3.2.6 SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	
(2) Load Shed Timer	1,2,3	1 per shutdown board(j~~k~~)	M	SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	
e. Trip of all Main Feedwater Pumps	1,2(~~k~~l)	1 per pump	N	SR 3.3.2.7 SR 3.3.2.9	NA	NA
f. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low	1,2,3	3 per pump	P	SR 3.3.2.8(b)(c)	≥ 2.44 psig (motor driven pump) ≥ 12 psig (turbine driven pump)	3.21 psig (motor driven pump) 13.9 psig (turbine driven pump)

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and as-left tolerances are specified in UFSAR, Section 7.1.2.

(j~~k~~) Unit 1 shutdown boards only.

(~~k~~l) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

Table 3.3.2-1 (page 4 of 9)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1[j], 2[i][j],3[i][j]	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. SG Water Level - High High (P-14)	1[j],2[i][j],3[i][j]	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4[b][c] SR 3.3.2.8[b][c] SR 3.3.2.9	≤ 81.7%	81%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and as-left tolerances are specified in UFSAR, Section 7.1.2.

(i) Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve.

(j) Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.

Table 3.3.2-1 (page 7 of 9)
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FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater						
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power						
(1) Voltage Sensors	1,2,3	3 per shutdown board(jk)	L,M	SR 3.3.2.6 SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	
(2) Load Shed Timer	1,2,3	1 per shutdown board(jk)	M	SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	
e. Trip of all Main Feedwater Pumps	1,2(kl)	1 per pump	N	SR 3.3.2.7 SR 3.3.2.9	NA	NA
f. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low	1,2,3	3 per pump	P	SR 3.3.2.8(b)(c)	≥ 2.44 psig (motor driven pump) ≥ 12 psig (turbine driven pump)	3.21 psig (motor driven pump) 13.9 psig (turbine driven pump)

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and as-left tolerances are specified in UFSAR, Section 7.1.2.

(jk) Unit 2 shutdown boards only.

(kl) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

Enclosure

Attachment 2

Proposed Technical Specification Changes (Mark-Up) for WBN Units 1 and 2

Table 3.3.2-1 (page 3 of 7)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4.	Steam Line Isolation (continued)						
	c. Containment Pressure-High High	1, 2[c], 3[c]	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10	≤ 2.9 psig	2.8 psig
	d. Steam Line Pressure						
	(1) Low	1, 2[c], 3[a] [c]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR .3.2.10	≥ 666.6[b] psig	675[b] psig
	(2) Negative Rate-High	3[d] [c]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10	≤ 108.5[e] psi	100[e] psi
5.	Turbine Trip and Feedwater Isolation						
	a. Automatic Actuation Logic and Actuation Relays	1[i], 2[f][i], 3[f][i]	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
	b. SG Water Level-High High(P-14)	1[i], 2[f][i], 3[f][i]	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10 [h]	≤ 83.1%	82.4%
	c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
	d. North MSV Vault Room Water Level - High	1, 2[f], [g]	3/vault Room	O	SR 3.3.2.6 SR 3.3.2.9	≤ 5.31 inches	4 inches
	e. South MSV Vault Room Water Level - High	1, 2[f], [g]	3/vault Room	O	SR 3.3.2.6 SR 3.3.2.9	≤ 4.56 inches	4 inches

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.
(b) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.
(c) Except when all MSIVs are closed and de-activated.
(d) Function automatically blocked above P-11 (Pressurizer Interlock) setpoint and is enabled below P-11 when safety injection on Steam Line Pressure Low is manually blocked.
(e) Time constants utilized in the rate/lag controller are t_3 and $t_4 \geq 50$ seconds.
(f) ~~Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.~~Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve.
(g) MODE 2 if Turbine Driven Main Feed Pumps are operating.
(h) For the time period between February 23, 2000, and prior to turbine restart (following the next time the turbine is removed from service), the response time test requirement of SR 3.3.2.10 is not applicable for 1-FSV-47-027.
(i) Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6.	Auxiliary Feedwater (continued)						
c.	Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d.	Loss of Offsite Power	1, 2 ,3	4 per bus	F	Refer to Function 4 of Table 3.3.5-1 for SRs and Allowable Values		
e.	Trip of all Main Feedwater Pumps						
(1)	Turbine Driven Main Feedwater Pumps	1[(ij)], 2	1 per pump	J	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 43.3 psig	50 psig
	and						
(2)	Standby Main Feedwater Pump	1, 2	1	P	SR 3.3.2.8 SR 3.3.2.10 SR 3.3.2.12	NA	NA
f.	Auxiliary Feedwater Pumps Train A and B Suction Transfer on Suction Pressure - Low	1, 2, 3, 4[(k)]	3	B	SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10	A) ≥0.5 psig B) ≥1.33 psig	A) 1.2 psig B) 2.0 psig
7.	Automatic Switchover to Containment Sump						
a.	Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

(continued)

(ij) Entry into Condition J may be suspended for up to 4 hours when placing a Turbine Driven Main Feedwater (TDMFW) Pump in service or removing a TDMFW pump from service.

~~(j) Deleted.~~

(k) When steam generators are relied on for heat removal.

SURVEILLANCE REQUIREMENTS (continued)

Table 3.3.2-1 (page 4 of 9)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5.	Turbine Trip and Feedwater Isolation						
a.	Automatic Actuation Logic and Actuation Relays	1(j), 2 (h)(j), 3 (h)(j)	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b.	SG Water Level – High High (P-14)	1(j), 2 (h)(j), 3 (h)(j)	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4 (b) (c) SR 3.3.2.9 (b) (c) SR 3.3.2.10	≤83.1%	82.4%
c.	Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d.	North MSV Vault Room Water Level – High	1, 2 (h)(i)	3 per vault room	O	SR 3.3.2.6 SR 3.3.2.9	≤ 5.31 inches	4 inches
e.	South MSV Vault Room Water Level – High	1, 2 (h)(i)	3 per vault room	O	SR 3.3.2.6 SR 3.3.2.9	≤ 4.56 inches	4 inches

(continued)

(b) If the as found channel setpoint is outside its redefined as found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The methodologies used to determine the as found and as left tolerances for the NTSP are specified in FSAR Section 7.1.2.

(h) ~~Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.~~Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve.

(i) MODE 2 if Turbine Driven Main Feed Pumps are operating.

(j) Turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening.

SURVEILLANCE REQUIREMENTS (continued)

Table 3.3.2-1 (page 6 of 9)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater (continued)						
d. Loss of Offsite Power	1, 2, 3	4 per bus	F	Refer to Function 4 of Table 3.3.5-1 for SRs and Allowable Values. Notes (b) and (c) are applicable to SR 3.3.5.2 for this function.		
e. Trip of all Main Feedwater Pumps						
(1) Turbine Driven Main Feedwater Pumps	1 (~~j~~k), 2	1 per pump	J	SR 3.3.2.8 (b)(c) SR 3.3.2.9 (b)(c) SR 3.3.2.10	≥43.3 psig	50 psig
and						
(2) Standby Main Feedwater Pumps	1, 2	1	P	SR 3.3.2.8 SR 3.3.2.10 SR 3.3.2.12	NA	NA
f. Auxiliary Feedwater Pumps Train A and B Suction Transfer on Suction Pressure - Low	1, 2, 3, 4(~~m~~l)	3	B	SR 3.3.2.6 SR 3.3.2.9 (b) (c) SR 3.3.2.10	A) ≥ 0.5 psig B) ≥ 1.33 psig	A) 1.2 psig B) 2.0 psig

(continued)

(b) If the as found channel setpoint is outside its redefined as found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The methodologies used to determine the as found and as left tolerances for the NTSP are specified in FSAR Section 7.1.2.

(~~j~~k) Entry into Condition J may be suspended for up to 4 hours when placing a Turbine Driven Main Feedwater (TDMFW) Pump in service or removing a TDMFW pumps from service.

~~(k) Deleted.~~

(~~m~~l) When steam generators are being relied on for heat removal.

Enclosure

Attachment 3

Proposed Technical Specification Bases Changes (Mark-Up) for SQN Units 1 and 2
(For Information Only)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

This Function is actuated by SG Water Level - High High, or by a SI signal. The nominal trip setpoint and allowable value limits are a percentage of the narrow range instrument span for each steam generator. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation and the AFW System is automatically started. The SI signal was discussed previously. The turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening (i.e., turbine tripped).

a. Turbine Trip and Feedwater Isolation - Automatic Actuation Logic and Actuation Relays

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b. Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Only three protection channels are necessary, with a two-out-of-three logic, to satisfy the protective requirements because a median signal selector is provided.

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the NTSP reflects only steady state instrument uncertainties.

c. Turbine Trip and Feedwater Isolation - Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

This Function is actuated by SG Water Level - High High, or by a SI signal. The nominal trip setpoint and allowable value limits are a percentage of the narrow range instrument span for each steam generator. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation and the AFW System is automatically started. The SI signal was discussed previously. The turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening (i.e., turbine tripped).

a. Turbine Trip and Feedwater Isolation - Automatic Actuation Logic and Actuation Relays

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b. Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Only three protection channels are necessary, with a two-out-of-three logic, to satisfy the protective requirements because a median signal selector is provided.

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the NTSP reflects only steady state instrument uncertainties.

c. Turbine Trip and Feedwater Isolation - Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

Enclosure

Attachment 4

Proposed Technical Specification Bases Changes (Mark-Up) for WBN Units 1 and 2
(For Information Only)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5. Turbine Trip and Feedwater Isolation

This Function is actuated by SG Water Level—High High, MSVV Water Level - High, or by a SI signal. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation and the AFW System is automatically started. The SI signal was discussed previously. The turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening (i.e., turbine tripped).

a. Turbine Trip and Feedwater Isolation-Actuation Logic and Actuation Relays

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b. Turbine Trip and Feedwater Isolation-Steam Generator Water Level-High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Since Watts Bar has only 3 level channels per SG, control/protection interaction is addressed by the use of a Median Signal Selector which prevents a single failure of a channel providing input to the control system requiring protection function action. That is, a single failure of a channel providing input to the control system does not result in the control system initiating a condition requiring protection function action. The Median Signal Selector performs this by not selecting the channels indicating the highest or lowest steam generator levels as input to the control system.

The Function is actuated when the level in any SG exceeds the high high setpoint, and performs the following functions:

- Trips the main turbine;
- Trips the MFW pumps;
- Initiates feedwater isolation; and
- Shuts the MFW regulating valves and the bypass feedwater regulating valves.

(continued)

APPLICABLE SAFETY ANALYSES LCO, and APPLICABILITY

b. Turbine Trip and Feedwater Isolation-Steam Generator Water Level-High High (P-14) (continued)

Since no adverse control system action may now result from a single, failed protection instrument channel, a second random protection system failure (as would otherwise be required by Reference 4) need not be considered.

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties.

c. Turbine Trip and Feedwater Isolation-Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements

d. Turbine Trip and Feedwater Isolation - Main Steam Valve Vault Room Water Level - High

This signal precludes submergence of equipment that is required for safe shutdown in the event of a MSVV Room flood due to a Main Feedwater line break. MSVV Room Water Level - High does not provide any control function. Thus, three OPERABLE channels in each Valve Vault Room are sufficient to satisfy the protection requirements with a two-out-of-three logic.

The level switches which are located inside the MSVV Rooms are subjected to adverse environmental conditions during a Main Feedwater line break. The trip setpoint reflects both steady state and adverse environmental instrument uncertainties.

Turbine Trip and Feedwater Isolation Functions - Automatic Actuation Logic and Actuation Relays, Steam Generator Water Level - High High (P-14), and Safety Injection must be OPERABLE in MODES 1, 2, and 3 except when all MFIVs, MFRVs, and associated MFRV bypass valves are closed ~~and de-activated~~ or isolated by a closed manual valve when the MFW System is in operation and the turbine generator may be in operation. In MODES 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE.

(continued)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5. Turbine Trip and Feedwater Isolation

The primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines, and to stop the excessive flow of feedwater into the SGs. These Functions are necessary to mitigate the effects of a high water level in the SGs, which could result in carryover of water into the steam lines and excessive cooldown of the primary system. The SG high water level is due to excessive feedwater flows.

An additional function of the Turbine Trip and Feedwater Isolation signal is to prevent submergence of safety related equipment in the Main Steam Valve Vault (MSVV) Rooms in the event of a Main Feedwater Line Break.

This Function is actuated by SG Water Level - High High, MSVV Water Level - High, or by an SI signal. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation, and the AFW System is automatically started.

The SI signal was discussed previously. The turbine trip function is not required when all turbine stop valves or all governor valves are closed and are incapable of opening (i.e., turbine tripped).

a. Turbine Trip and Feedwater Isolation - Actuation Logic and Actuation Relays

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b. Turbine Trip and Feedwater Isolation – Steam Generator Water Level-High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Since Watts Bar has only 3 level channels per SG, control/protection interaction is addressed by the use of a Median Signal Selector which prevents a single failure of a

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

d. Turbine Trip and Feedwater Isolation - Main Steam Valve Vault Room Water Level - High

This signal precludes submergence of equipment that is required for safe shutdown in the event of a MSVV Room flood due to a Main Feedwater line break. MSVV Room Water Level - High does not provide any control function. Thus, three OPERABLE channels in each Valve Vault Room are sufficient to satisfy the protection requirements with a two-out-of-three logic.

The level switches which are located inside the MSVV Rooms are subjected to adverse environmental conditions during a Main Feedwater line break. The NTSP reflects both steady state and adverse environmental instrument uncertainties.

Turbine Trip and Feedwater Isolation Functions - Automatic Actuation Logic and Actuation Relays, Steam Generator Water Level - High High (P-14), and Safety Injection must be OPERABLE in MODES 1, 2, and 3 except when all MFIVs, MFRVs, and associated MFRV bypass valves are closed ~~and de-activated~~ or isolated by a closed manual valve when the MFW System is in operation and the turbine generator may be in operation. In MODES 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE.

Turbine Trip and Feedwater Isolation Function - MSVV Room Water Level - High must be OPERABLE in MODE 1 and in MODE 2 when the Turbine Driven Main Feedwater Pumps are operating. In MODE 2, due to the limited capacity of the Standby Main Feed Pump, and in MODES 3, 4, 5, and 6 a Main Feedwater Line break will not result in flooding which will submerge required safety equipment in the MSVV Rooms, therefore this Function is not required to be OPERABLE.

(continued)