



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-14-150

October 21, 2014

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

Watts Bar Nuclear Plant, Unit 2
Construction Permit No. CPPR-92
NRC Docket No. 50-391

Subject: Watts Bar Nuclear Plant Unit 2 – Response to Requests for Additional Information, Developmental Revision I Technical Specification (Section 3.3) and Technical Specification Bases (Limiting Condition for Operation B 3.0.6)

- Reference:
1. Electronic Mail from Michael J. Miernicki (NRC) to Gordon Arent (TVA), "Watts Bar 2 – RAI – Developmental Tech Specs Rev I," dated July 22, 2014
 2. Electronic Mail from Michael J. Miernicki (NRC) to Gordon Arent (TVA), "Watts Bar 2 – RAI – Developmental Tech Specs Rev I," dated July 15, 2014
 3. TVA Letter to NRC, "Watts Bar Nuclear Plant Unit 2 – Submittal of Developmental Revision I of the Unit 2 Technical Specification & Technical Specification Bases and Developmental Revision D of the Unit 2 Technical Requirements Manual and Technical Requirements Manual Bases," dated June 16, 2014 [ADAMS Accession No. ML14169A525]

The purpose of this letter is to respond to requests for additional information (RAI) from the Nuclear Regulatory Commission (NRC) provided in References 1 and 2.

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On June 16, 2014, the Tennessee Valley Authority submitted the Watts Bar Nuclear Plant Unit 2 Developmental Revision I of the Unit 2 Technical Specifications and Technical Specification Bases and Developmental Revision D of the Unit 2 Technical Requirements Manual and Technical Requirements Manual Bases to the NRC (Reference 3).


Enclosure 1 to this letter provides TVA's response to the RAI in Reference 1.

Enclosure 2 to this letter provides TVA's responses to the four RAIs in Reference 2.

There are no new regulatory commitments associated with this submittal. If you have any questions, please contact Gordon Arent at (423) 365-2004.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 21st day of October, 2014.

Respectfully,


J. W. Shea
Vice President, Nuclear Licensing

- Enclosures:
1. Response to NRC Request for Additional Information –
Developmental Revision I for Technical Specification Bases, B 3.0.6 –
Limiting Condition for Operation 3.0.6
 2. Response to NRC Request for Additional Information –
Developmental Revision I for Technical Specification Section 3.3

cc (Enclosure):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Watts Bar Nuclear Plant, Unit 2
NRC Project Manager – Watts Bar Nuclear Plant, Unit 2

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 2

**Response to NRC Request for Additional Information –
Developmental Revision I Technical Specification Bases, B 3.0.6 -
Limiting Condition for Operation 3.0.6**

ENCLOSURE 1

**TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 2**

**Response to NRC Request for Additional Information – Developmental Revision I
Technical Specification Bases, B 3.0.6 - Limiting Condition for Operation 3.0.6**

NRC RAI Number: 1

NRC RAI:

Since the additional paragraph on pages B 3.0-9 and B 3.0-10 does not summarize the reason for LCO 3.0.6, but adds a new condition to LCO 3.0.6 such that LCO 3.0.6 may now be applied to a non-TS support system, please explain the basis for inclusion of this paragraph in the TS bases.

TVA Response:

Based on discussions with the Nuclear Regulatory Commission staff in regard to the subject request for additional information, the Tennessee Valley Authority agreed to revert to the previous Technical Specification (TS) Bases text for Limiting Condition for Operation (LCO) 3.0.6 which had been unchanged prior to the issuance of Developmental Revision I. This change has been incorporated in interim Developmental Revision J.

The following page shows corrected TS LCO 3.0.6. Note 'revision bar' indicating the revised text.

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Bases, B 3.0.6 - Limiting Condition for Operation 3.0.6

NRC RAI Number: 1 (continued)

LCO Applicability
B 3.0

BASES (continued)

LCO 3.0.5

LCO 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to LCO 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of SRs to demonstrate:

- a. The OPERABILITY of the equipment being returned to service; or
- b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed SRs. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the SRs.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of an SR on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of an SR on another channel in the same trip system.

LCO 3.0.6

LCO 3.0.6 establishes an exception to LCO 3.0.2 for support systems that have an LCO specified in the Technical Specifications (TS). This exception is provided because LCO 3.0.2 would require that the Conditions and Required Actions of the associated inoperable supported system LCO be entered solely due to the inoperability of the support system. This exception is justified because the actions that are required to ensure the unit is maintained in a safe condition are specified in the support system LCO's Required Actions. These Required Actions may include entering the supported system's Conditions and Required Actions or may specify other Required Actions.

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Bases, B 3.0.6 - Limiting Condition for Operation 3.0.6

NRC RAI Number: 1 (continued)

LCO Applicability
B 3.0

BASES (continued)

LCO 3.0.6
(continued)

When a support system is inoperable and there is an LCO specified for it in the TS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do so by the support system's Required Actions. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' LCOs' Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the unit is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some other Required Action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

Specification 5.7.2.18, "Safety Function Determination Program (SFDP)," ensures loss of safety function is detected and appropriate actions are taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other limitations, remedial actions, or compensatory actions may be identified as a result of the support system inoperability and corresponding exception to entering supported system Conditions and Required Actions. The SFDP implements the requirements of LCO 3.0.6.

Cross train checks to identify a loss of safety function for those support systems that support multiple and redundant safety systems are required. The cross train check verifies that the supported systems of the redundant OPERABLE support system are OPERABLE, thereby ensuring safety function is retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

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ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 2

**Response to NRC Request for Additional Information –
Developmental Revision I Technical Specification Section 3.3**

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 1

NRC RAI:

On Table 3.3.1-1 (TS page 3.3-22), Note 2, Overpower ΔT equation, the sign before K_6 was changed from "-" to "+". The staff needs clarification from the applicant as to the reasons for the change.

Watts Bar 2 TS, Rev I:

$$\Delta T \left\{ \frac{1 + \tau_4 s}{1 + \tau_5 s} \right\} \leq \Delta T_0 \left\{ K_4 - K_5 \frac{(\tau_3 s)}{(1 + \tau_3 s)} [T] \oplus K_6 (T - T'') - f_2(\Delta I) \right\}$$

Watts Bar 2 TS, Rev A:

$$\Delta T \left(\frac{1 + \tau_4 s}{1 + \tau_5 s} \right) \leq \Delta T_0 \left\{ K_4 - K_5 \left(\frac{\tau_3 s}{1 + \tau_3 s} \right) T \ominus K_6 [T - T'] - f_2(\Delta I) \right\}$$

TVA Response:

The Tennessee Valley Authority confirmed that the correct sign should be '-' for the Watts Bar Nuclear Plant Unit 2 Technical Specifications, Limiting Condition for Operation (LCO) 3.3.1, Table 3.3.1-1, Note 2: Overpower ΔT . The equation has been corrected in interim Developmental Revision J.

The following page shows corrected LCO 3.3.1, Table 3.3.1-1. Note 'revision bar' indicating the revised text.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 1 (continued)

RTS Instrumentation
3.3.1

Table 3.3.1-1 (page 8 of 9)
Reactor Trip System Instrumentation

Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following Trip Setpoint by more than 1.0% of ΔT span.

$$\Delta T \left\{ \frac{1+\tau_4 s}{1+\tau_5 s} \right\} \leq \Delta T_0 \left\{ K_4 - K_5 \frac{(\tau_3 s)}{(1+\tau_3 s)} [T] - K_6 (T - T'') - f_2(\Delta I) \right\}$$

Where: ΔT is measured RCS ΔT , °F.
 ΔT_0 is the indicated ΔT at RTP, °F.
 s is the Laplace transform operator, sec⁻¹.
 T is the measured RCS average temperature, °F.
 T'' is the indicated T_{avg} at RTP, $\leq 588.2^\circ\text{F}$.

$$K_4 \leq 1.10 \quad K_5 \geq \begin{cases} 0.02/^\circ\text{F for increasing } T_{avg} \\ 0/^\circ\text{F for decreasing } T_{avg} \end{cases} \quad K_6 \geq \begin{cases} 0.00162/^\circ\text{F when } T > T'' \\ 0/^\circ\text{F when } T \leq T'' \end{cases}$$

$$\tau_3 \geq 5 \text{ sec} \quad \tau_4 \geq 3 \text{ sec} \quad \tau_5 \leq 3 \text{ sec}$$

$$f_2(\Delta I) = 0 \text{ for all } \Delta I.$$

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 2

NRC RAI:

On Table 3.3.2-1 (page 3.3-39), Function 8 (ESFAS Interlocks), b (Pressurizer Pressure P-11), (2) (Enable Manual Block of SI), the allowable value was changed from " ≥ 1956.8 psig" to " ≤ 1956.8 psig". The staff needs clarification from the applicant as to the reasons for the change.

TVA Response:

The Tennessee Valley Authority confirmed that the correct symbol is ' \geq ' for the Watts Bar Nuclear Plant Unit 2 Technical Specifications, Limiting Condition for Operation (LCO) 3.3.2, Table 3.3.2-1, Function 8 b (2), Surveillance Requirement 3.3.2.1. The symbol has been corrected in interim Developmental Revision J.

The following page shows corrected LCO 3.3.2, Table 3.3.2-1. Note 'revision bar' indicating the revised text.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 2 (continued)

ESFAS Instrumentation
3.3.2

Table 3.3.2-1 (page 7 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION		APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
8.	ESFAS Interlocks						
a.	Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.11	NA	NA
b.	Pressurizer Pressure, P-11						
(1)	Unblock (Auto Reset of SI Block)	1, 2, 3	3	L	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9	≤ 1975.2 psig	1970 psig
(2)	Enable Manual Block of SI	1, 2, 3	3	L	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9	≥ 1956.8 psig	1962 psig

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 3

NRC RAI:

TS 3.3.8, "Auxiliary Building Gas Treatment System (ABGTS) Actuation Instrumentation," has several changes related to the elimination (from Table 3.3.8-1) of the Fuel Pool Area Monitors during movement of irradiated fuel assemblies in the spent fuel pool area. Condition C in TS revision A has been removed (Condition D in TS revision A is now Condition C in TS revision H) and SR 3.3.8.1, SR 3.3.8.2 and SR 3.3.8.4 in TS revision A have been removed (SR 3.3.8.3 in TS revision A is now SR 3.3.8.1 in TS revision H). EICB staff is not aware of the reasons for this change. Please provide an explanation of the reason for this change.

TVA Response:

On September 23, 2011, the Tennessee Valley Authority (TVA) provided their analysis of the Watts Bar Nuclear (WBN) Unit 2 selective utilization of the Alternate Source Term (AST) for the WBN Unit 2 Fuel Handling Accident (FHA) to the Nuclear Regulatory Commission (NRC) (ADAMS Accession No. ML11269A064).

The NRC issued Supplemental Safety Evaluation Report (SSER) 25 to TVA's WBN Unit 2 on November 30, 2011 (ADAMS Accession No. ML12011A024). Section 15.4.5.2 of SSER 25 confirmed the acceptability of selective utilization of the AST for the WBN Unit 2 FHA.

The Main Control Room dose analysis for the FHA which is based on the AST submitted in WBN Unit 2 Final Safety Analysis (FSAR) Amendment 107, does not credit actuation of the Auxiliary Building Emergency Gas Treatment System (ABGTS) in mitigating the potential consequences of FHA. The spent fuel pool (SFP) radiation monitors were the credited instruments that initiated ABGTS in the previous Regulatory Guide 1.25 FHA dose analysis as described in the FSAR prior to Amendment 107. The FHA is the only accident addressed in Chapter 15 of the WBN Unit 2 FSAR that credited the spent fuel pool radiation monitors for initiating the ABGTS. Amendment 107 of the FSAR, and SSER 25 were the basis for removing the requirements from TS 3.3.8.

The TVA letter to the NRC dated December 12, 2013, "Watts Bar Nuclear Plant Unit 2 – Submittal of Developmental Revision H of the Unit 2 Technical Specification and Technical Specification Bases," (ADAMS Accession No. ML13357A048) documented the deletion of the SFP radiation monitors previously credited in the FHA, based on SSER 25.

Therefore, SSER 25 and FSAR Amendment 107 support the removal of the SFP radiation monitors as the initiating instrumentation for ABGTS, and subsequent Developmental Revision H, TS 3.3.8 revision.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 4

NRC RAI:

On Table 3.3.1-1 (page 3.3-18), Function 14 (Turbine Trip), a (Low Fluid Oil Pressure), SR 3.3.1.10(b)(c) was added in revision G (as a correction of a typo). However, it was removed in revision I, even though the page remains marked as revision G. This SR is for the performance of a channel calibration. The staff needs clarification from the applicant as to the reasons for the change.

TVA Response:

The Tennessee Valley Authority has confirmed that Developmental Revision G of the Watts Bar Nuclear Plant Unit 2 Technical Specifications, Limiting Condition for Operation (LCO) 3.3.1, Table 3.3.1-1, Function 14, a. Low Fluid Oil Pressure, Surveillance Requirement (SR) 3.3.1.10 was correct as stated. The footnotes reference associated with SR 3.3.1.10 have been corrected in interim Developmental Revision J.

The following page shows corrected LCO 3.3.1, Table 3.3.1-1. Note 'revision bar' indicating the revised text.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT, UNIT 2

Response to NRC Request for Additional Information – Developmental Revision I Technical Specification Section 3.3

NRC RAI Number: 4 (continued)

RTS Instrumentation
3.3.1

Table 3.3.1-1 (page 4 of 9)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
13. SG Water Level – Low-Low	1, 2	3/SG	U	SR 3.3.1.1 SR 3.3.1.7 ^{(b)(c)} SR 3.3.1.10 ^{(b)(c)} SR 3.3.1.15	≥ 16.4% of narrow range span	17% of narrow range span
Coincident with:						
a) Vessel ΔT Equivalent to power ≤ 50% RTP With a time delay (T _s) if one steam generator is affected or A time delay (T _m) if two or more steam generators are affected	1, 2	3	V	SR 3.3.1.7 ^{(b)(c)} SR 3.3.1.10 ^{(b)(c)}	Vessel ΔT variable input ≤ 52.6% RTP ≤ 1.01 T _s (Refer to Note 3, Page 3.3-23) ≤ 1.01 T _m (Refer to Note 3, Page 3.3-23)	Vessel ΔT variable input 50% RTP T _s (Refer to Note 3, Page 3.3-23) T _m (Refer to Note 3, Page 3.3-23)
b) Vessel ΔT Equivalent to power > 50% RTP with no time delay (T _s and T _m = 0)	1, 2	3	V	SR 3.3.1.7 ^{(b)(c)} SR 3.3.1.10 ^{(b)(c)}	Vessel ΔT variable input ≤ 52.6% RTP	Vessel ΔT variable input 50% RTP
14. Turbine Trip						
a. Low Fluid Oil Pressure	1 ⁽ⁱ⁾	3	O	SR 3.3.1.10 ^{(b)(c)} SR 3.3.1.14	≥ 38.3 psig	45 psig
b. Turbine Stop Valve Closure	1 ⁽ⁱ⁾	4	Y	SR 3.3.1.10 SR 3.3.1.14	≥ 1% open	1% open

(continued)

(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. The methodologies used to determine the as found and as left tolerances for the NTSP are specified in FSAR Section 7.1.2

(i) Above the P-9 (Power Range Neutron Flux) interlock

Watts Bar - Unit 2
(developmental)

3.3-8

Revision J