Watts Bar Nuclear Plant

Watts Bar Nuclear Plant (WBN)
Pre-submittal Meeting for Expedited License Amendment Request
Main Control Room (MCR) Chiller Completion Time Extension

February 15, 2023

TVA TENNESSEE VALLEY AUTHORITY

Agenda

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- Background
- Current Technical Specification (TS) Requirements
- Reason for the Proposed Change
- Revised MCR Chiller Replacement Schedule
- Proposed Technical Specification Changes
- Changes to MCR Temporary Chilled Water Equipment Description
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Introduction

- The purpose of this meeting is to discuss a proposed expedited license amendment request (LAR) for WBN Units 1 and 2.
- TVA is requesting an expedited license amendment for a revision to the one-time footnotes to WBN Units 1 and 2 Technical Specification (TS) 3.7.11, “Control Room Emergency Air Temperature Control System (CREATCS),” Required Actions A.1 and E.1 to reflect a change in the scheduling dates for the CREATCS chillers [main control room chillers (MCR) A and B].
- There are no technical changes or changes to the TS compensatory measures associated with the proposed amendment.
- The proposed change is due to delays in the vendor delivery of the MCR CREATCS chillers, which were beyond the control of TVA.

Background

- 5/19/2020 - TVA submits the LAR to modify the WBN Units 1 and TS for MCR completion time extension (ML20140A342). LAR includes technical information on the MCR CREATCS replacement project including the temporary chilled water system to be utilized during the MCR CREATCS replacement project.
- 9/2/2020-10/1/2020 – NRC conducts an audit of the LAR (ML21012A084)
- 12/16/2020 – TVA responds to NRC RAI (ML20351A424)
- 5/5/2021 – NRC approves the LAR (ML21078A484)

Current TS Requirements

Units 1 and 2 – TS 3.7.11 Footnote for Action A.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREATCS train inoperable.	A.1 Restore CREATCS train to OPERABLE status.	30 days*

* An allowance is permitted for one CREATCS train to be inoperable for up to 60 days. This TS provision is only authorized for one entry per train during modification activities planned for the upgrade of the main control room chillers beginning no earlier than May 1, 2022, and ending no later than May 1, 2023, provided compensatory measures are implemented as described in TVA letter CNL-20-012, dated May 19, 2020.

Current TS Requirements

Units 1 and 2 – TS 3.7.11 Footnote for Action E.1

E.	Two CREATCS trains inoperable in MODE 1, 2, 3, or 4.	E.1	Enter LCO 3.0.3.	Immediately**

** An allowance to monitor the main control room temperature every hour and verify the main control room temperature is less than or equal to 90°F is permitted for up to four days in lieu of the immediate entry into LCO 3.0.3. If the main control room temperature exceeds 90°F, or the duration without a train of CREATCS being OPERABLE exceeds four days, immediate entry into LCO 3.0.3 is required. This provision is only applicable during modification activities planned for the upgrade of the main control room chillers beginning no earlier than May 1, 2022, and ending no later than May 1, 2023, provided compensatory measures are implemented as described in TVA letter CNL-20-012, dated May 19, 2020.

Reason for the Proposed Change

- Due to unforeseen supplier chain issues, TVA is unable to meet the current TS date range of May 1, 2022, to May 1, 2023, for the MCR chiller replacement as required by the existing footnotes to the Completion Time for WBN Units 1 and 2 TS 3.7.11, Required Actions A.1 and E.1.
- As shown in Table 1, the new MCR chillers have not yet been received and are not scheduled to commence installation until the third quarter 2023.

Revised MCR Chiller Replacement Schedule

Table 1 Revised WBN MCR Chiller Replacement Timeline	
Activity	Date
U1R18 Outage	4/14/2023-5/13/2023
Qualification of MCR Chillers	4/28/2023
New MCR B Chiller at WBN	5/3/2023
New MCR A Chiller at WBN	5/9/2023
Replace existing MCR B chiller	7/17/2023 – 8/24/2023
U2R5 Outage	11/03/2023 – 12/02/2023
Replace existing MCR A chiller	1/29/2024 – 3/24/2024
U1R19 Outage	11/1/2024-12/13/2024

Proposed TS Changes

- Revise the current start and end dates in the footnotes to TS 3.7.11, Required Actions A.1 and E.1 to July 1, 2023, to December 31, 2024, respectively (provides a margin for any potential further schedule delays).
  - Reflects the current MCR replacement schedule (allowing for margin for any potential further schedule delays).
  - Requires expedited NRC review and approval of the LAR because NRC approval would be required no later than June 15, 2023 (allowing 15 days for implementation).

Proposed Technical Specification Change

Units 1 and 2 – TS 3.7.11 Footnote for Action A.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREATCS train inoperable.	A.1 Restore CREATCS train to OPERABLE status.	30 days*

* An allowance is permitted for one CREATCS train to be inoperable for up to 60 days. This TS provision is only authorized for one entry per train during modification activities planned for the upgrade of the main control room chillers beginning no earlier than July ~~May~~ 1, 202~~2~~3, and ending no later than December ~~May~~ 31, 202~~3~~4, provided compensatory measures are implemented as described in TVA letter CNL-20-012, dated May 19, 2020.

Proposed Technical Specification Change

Units 1 and 2 – TS 3.7.11 Footnote for Action E.1

E.	Two CREATCS trains inoperable in MODE 1, 2, 3, or 4.	E.1	Enter LCO 3.0.3.	Immediately**

** An allowance to monitor the main control room temperature every hour and verify the main control room temperature is less than or equal to 90°F is permitted for up to four days in lieu of the immediate entry into LCO 3.0.3. If the main control room temperature exceeds 90°F, or the duration without a train of CREATCS being OPERABLE exceeds four days, immediate entry into LCO 3.0.3 is required. This provision is only applicable during modification activities planned for the upgrade of the main control room chillers beginning no earlier than July ~~May~~ 1, 202~~2~~3, and ending no later than December ~~May~~ 3~~1~~, 202~~3~~4, provided compensatory measures are implemented as described in TVA letter CNL-20-012, dated May 19, 2020.

Changes to MCR Temporary Chilled Water Equipment Description

- There are no technical changes to the replacement planned MCR CREATCS chillers as described in the previous LAR (ML20140A342) and the NRC safety Evaluation (SE) (ML21078A484).
- Differences between the currently planned MCR temporary chiller equipment description and the MCR temporary chiller equipment description in Section 3.1 to the previous LAR and the NRC Regulatory Audit Summary (ML21012A084) are provided in Tables 2 and 3, respectively. There are no changes to the MCR temporary chiller equipment description in the previous TVA RAI response (ML20351A424).
- The compensatory measures listed in the previous LAR and the NRC SE remain unchanged.

Table 2				
Item No.	Description in LAR	Currently Planned Installation	Reason for Change	Significance
1	Page E6 of 24, paragraph 1 describes, “The chilled water piping inlet and outlet to the AHUs is removed and replaced with temporary piping for the temporary chiller system.”	The inlet and outlet piping will no longer be removed. Permanent branch connections with isolation valves are being added via permanent modification to the inlet and outlet piping to the AHUs to allow connection of the temporary chiller without removal of piping.	To allow more efficient (less time) transition between the temporary and permanent chillers which will be advantageous during the post modification test (PMT) window and should reduce time in the TS Required Action Completion Time.	This new configuration is functionally equivalent to the configuration described in the LAR and is expected to benefit the project by reducing the time in the TS Required Action Completion Time.
2	Page E6 of 24, Section 3.2 describes major equipment and includes “Chilled water Pump.”	The temporary chiller installation may have as many as three pumps. Additionally, one “major equipment” item that was not included in the LAR description is a transfer switch, to allow transfer between plant power and the diesel generator (DG) for the temporary chiller.	The temporary chiller installation includes multiple pumps to meet necessary hydraulic conditions. The temporary chiller installation includes a transfer switch.	These items were included for completeness of information.

Table 2				
Item No.	Description in LAR	Currently Planned Installation	Reason for Change	Significance
3	Page E6 of 24, Section 3.2.1 refers to a 320kW DG. Section 3.2.4 also refers to the 320kW DG.	The DG referred to in the LAR (a rented Aggreko chiller) is rated at 320kW at 50Hz. The rating of this DG is 300kW at 60Hz, which is adequate for the temporary/rented Aggreko chiller equipment. A Caterpillar (CAT) generator and Carrier chiller have also been purchased by the site to reduce reliance on rented equipment. The ratings (tons and kW) of the CAT/Carrier equipment exceed the ratings of the rented Aggreko equipment.	Clarification on the rating of the Aggreko DG and to include reference to the CAT generator which the site has purchased, along with a Carrier chiller.	Both the rented Aggreko equipment and the Carrier/CAT equipment have adequate electrical and cooling capacity to meet the requirements for the temporary chiller system.
4	Page E6 of 24, Section 3.2.1, second paragraph states, “Connection to the AHU coils will be made by isolating the chilled water piping, removing the flex hoses between the AHU coils and the chilled water piping and then reconnecting the temporary chilled water supply and return hoses to the AHU coils using existing flange connections.”	Permanent branch connections have been added to the AHU piping, Therefore, it is more accurate to state "Connection to the AHU coils is made via permanent flanged branch connections with an isolation valve, which were added as part of the chiller replacement project subsequent to the submittal of the LAR."	To allow more efficient (less time) transition between the temporary and permanent chillers which will be advantageous during the PMT window and should reduce time in the TS Required Action Completion Time.	This new configuration is functionally equivalent to the configuration described in the LAR and is expected to benefit the project by reducing the time in the TS Required Action Completion Time.

Table 2				
Item No.	Description in LAR	Currently Planned Installation	Reason for Change	Significance
5	Page E7 of 24, Section 3.2.2 refers to 2.5 inch(“) diameter supply and return hoses.	Hose sizes used in the temporary chilled water system are of various sizes (3”, 4” and 6”)	Final configuration to meet hydraulic requirements.	Larger hose sizes meet hydraulic requirements and offer less resistance compared to smaller hose sizes.
6	Page E7 of 24, Section 3.2.3 states, “The equipment associated with the temporary chiller system will be located in the yard west of the Auxiliary Building and in the Control Building (Elevation 729.0 feet).”	As noted in the NRC audit summary, "The two potential locations with respect to assumed plant north are (a) due west of the Auxiliary Building or (b) northwest of the Unit 1 Containment."	Provide flexibility in chiller locations.	Both locations are a similar distance (hose run). Both locations are also sufficiently distant from the plant air intakes.

Table 2				
Item No.	Description in LAR	Currently Planned Installation	Reason for Change	Significance
7	Page E7 of 24, Section 3.2.3 states, “the temporary chiller system will be protected from freezing.”	This statement is intended to mean “as required.” The design package states that if the chiller is deployed during winter months, steps should be taken to avoid freezing (e.g., draining lines when not in use, use of heat tape and insulation).	Clarification.	Clarification.

Table 3				
Item No.	Description in NRC Audit Report	Currently Planned Installation	Reason for Change	Significance
1	Page 4 of 7 of the Audit Report states, “Connection to the AHU coils will be made by isolating the chilled water piping, removing the flex hoses between the AHU coils and the chilled water piping and then reconnecting the temporary chilled water supply and return hoses to the AHU coils using existing flange connections.”	Permanent branch connections have been added to the AHU piping; therefore, a current statement would be, "Connection to the AHU coils is made via permanent flanged branch connections with an isolation valve, which were added as part of the chiller replacement project subsequent to the submittal of the LAR."	To allow more efficient (less time) transition between the temporary and permanent chillers which will be advantageous during the PMT window and should reduce time in the TS Required Action Completion Time.	This new configuration is functionally equivalent to the configuration described in the LAR and is expected to benefit the project by reducing the time in the TS Required Action Completion Time.
2	Page 5 of 7 of the Audit Report states, “The temporary chiller skid DG fuel oil tank’s capacity provides a 12-hour run time for the chiller skid without fuel oil replenishment, which allows the licensee time for replenishing measures.”	The CAT DG has a 300 gallon tank, which provides a 24-hour run time which is conservative compared to the value cited here.	To reflect the capacity of the CAT DG which would be used with the Carrier chiller.	The run time for the CAT DG is longer than the run time for the Aggreko DG, which is conservative to what is described in the Audit Report.

Schedule Milestones

- TVA to submit LAR to NRC by February 28, 2023.
- Request expedited NRC approval by June 15, 2023.
- 15-day implementation following NRC approval.

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