



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

January 26, 2021

Mr. James Barstow  
Vice President, Nuclear Regulatory  
Affairs and Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 – REGULATORY AUDIT  
SUMMARY RELATED TO REQUEST TO TECHNICAL SPECIFICATION 3.7.11,  
“CONTROL ROOM EMERGENCY AIR TEMPERATURE CONTROL SYSTEM  
(CREATCS)” (EPID L-2020-LLA-0114)

Dear Mr. Barstow:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated May 19, 2020, Tennessee Valley Authority (TVA) submitted a license amendment request that would revise Watts Bar Technical Specification (TS) 3.7.11, “Control Room Emergency Air Temperature Control System (CREATCS),” to add a one-time change with a footnote to the Completion Time for Required Action A.1. This footnote allows each CREATCS train to be inoperable for up to 60 days while performing modifications to each respective train’s obsolete chiller. The proposed amendments would also add a footnote to the Completion Time for Required Action E.1. The footnote allows an up-to-four-day delayed entry into TS Limiting Condition for Operation (LCO) 3.0.3.

To enhance the review of TVA’s request, the NRC staff conducted an audit of supporting documents from September 2 through October 1, 2020. The staff audited the requested documents to confirm certain information relied upon in the license amendment request. A summary of the regulatory audit is enclosed.

The NRC staff did not identify any significant issues during the audit. However, the staff did identify the need for additional information related to the topic of the audit. Separate correspondence containing a request for additional information was transmitted to Mr. Russ Wells on November 17, 2020.

Sincerely,

*/RA/*

Kimberly J. Green, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-390 and 50-391

Enclosure:  
Regulatory Audit Summary

cc: Listserv



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NUCLEAR REGULATORY COMMISSION  
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REGULATORY AUDIT SUMMARY

LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION 3.7.11,

“CONTROL ROOM EMERGENCY AIR TEMPERATURE CONTROL SYSTEM (CREATCS)”

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-390 AND 50-391

1.0 BACKGROUND

A regulatory audit is a planned license or regulation-related activity that includes the examination and evaluation of docketed and non-docketed information. The audit was conducted with the intent to gain understanding, to verify information, and to identify information that will require docketing to support the basis of a licensing or regulatory decision.

By application dated May 19, 2020, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20140A342) Tennessee Valley Authority (TVA, the licensee) submitted a license amendment request (LAR) to Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2, respectively. The proposed amendment would revise Watts Bar Technical Specification (TS) 3.7.11, “Control Room Emergency Air Temperature Control System (CREATCS),” to add a one-time change with a footnote to the Completion Time for Required Action A.1. This footnote allows each CREATCS train to be inoperable for up to 60 days while performing modifications to each respective train’s obsolete chiller.

The proposed amendment also adds a footnote to the Completion Time for Required Action E.1. The footnote allows an up-to-four-day delayed entry into TS Limiting Condition for Operation (LCO) 3.0.3. During the post-replacement testing of each new chiller, both CREATCS trains will need to be declared inoperable to allow for comprehensive testing of the new CREATCS chiller.

As proposed by TVA, both TS changes (i.e., the footnotes) to Action A.1 and Action E.1 are limited to the time that the CREATCS modifications are being performed between the timeframe of May 1, 2021, to October 1, 2022. The applicability of each footnote will expire on October 1, 2022.

The U.S. Nuclear Regulatory Commission (NRC) staff performed a preliminary review of the LAR and determined that a regulatory audit would assist in the timely completion of the review. The regulatory audit was performed consistent with the NRC Office of Nuclear Reactor

Enclosure

Regulation Office Instruction LIC-111, "Regulatory Audits," Revision 1, dated October 31, 2019 (ADAMS Accession No. ML19226A274). The NRC staff conducted a regulatory audit that consisted of a remote audit, including discussions with the licensee, from September 2 through October 1, 2020. The audit plan was provided to TVA on August 25, 2020 (ADAMS Accession No. ML20239A969). The list of documents uploaded by the licensee in response to the NRC staff's request and examined by the audit team is provided in Section 5.0.

The NRC staff reviewed documents and held discussions with members of TVA during the week of October 1, 2020, regarding the LAR under staff review. The collective results of the regulatory audit were used by the NRC staff to finalize requests for additional information (RAIs), which was issued on November 17, 2020 (ADAMS Accession No. ML20322A441).

## 2.0 AUDIT ACTIVITIES AND OBSERVATIONS

The remote audit was conducted using an online portal and teleconferencing capabilities. The purpose of the audit was to (1) gain a better understanding of the information in the LARs to support the staff's review, and (2) identify any information that would be required from the licensee to be provided on the docket for the NRC staff to render a staff finding to support the safety evaluation.

The NRC staff made the following observations based on its audit of the documents listed in Section 5.0 of this report:

- Supply and return hoses routed through the Service Building and into the Control Building will be used to route the chilled water from the temporary-chilled-water-skid package to the air-handling units (AHUs) in the Control Building. The hoses will be routed as appropriate to the TS inoperable but functional AHU. A manual isolation valve connected to a pipe is integrated into each of two-floor penetrations. The two penetrations are part of the floor of the mechanical equipment room of the Main Control Room Habitability Zone (MCRHZ) on Control Building Elevation 755.0'. The two isolation valves with connected pipes will be used for routing the chilled water supply and return hoses to the appropriate MCR AHU located in the mechanical equipment room. Connection to the AHU coils will be made by isolating the plant chilled water piping, removing the flex hoses between the AHU coils and the permanent plant chilled water piping, and then connecting the temporary chilled water supply and return hoses to the AHU coils using the existing flange connections. As noted, the mechanical equipment room is part of the MCRHS area (a.k.a, MCRHZ), which includes all rooms on plan Elevation 755' of the Control Building. The required combined area to accommodate these two breaches, can be procedurally controlled within the constraints of the licensing basis analysis pertaining to design basis accident consequences to control room envelope occupants.
- Provisions exist in the Watts Bar temporary modification (i.e., T-mod) work packages to control the spraying effects of leakage in the event either the supply or return hoses develop a leak during the time the temporary chiller is supply cooling water to the inoperable but functional AHU.
- The 150-ton (minimum) capacity of the temporary chiller skid exceeds the individual design capacity of each CREATCS AHU.

- The temporary chiller skid diesel generator (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 temporary chiller package will be stationed in the yard, and the chilled water lines run from the chiller package to the inoperable but functional affected AHU. This chiller package will be located at either of the two locations. 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. Both locations will locate the temporary chiller skid approximately 250 feet from both the Auxiliary Building Fresh Air intake and the closest of the two MCR Fresh Air intakes. Final connection of the chilled water lines to the AHU will occur when each to be replaced respective chiller train is taken out of service. In the event that non-safety related 480 volt alternating current (AC) source is lost and the skid's DG is required to operate to power the temporary chiller, the staff determined that based on the distance of the skid from the fresh air intakes that any diesel engine exhaust fumes emitted from the skid would be sufficiently dilute so as not to provide a threat to MCR habitability or Auxiliary Building accessibility.
- The NRC staff examined WBN-0-2019-031-001, Revision 0, "Temporary Chiller to Support Replacement of A-Train MCR Chiller," to confirm that the design and the qualification of the temporary hoses, pipe, fittings, and the valves at the penetrations will minimize the potential for failure of the temporary chiller system and the control room envelope boundary. However, the staff was unable to verify that the temporary hoses, pipe, and fittings are qualified for adequate pressure to protect against rupture and pipe whip, and the valves at the penetrations are qualified for seismic retention to maintain the integrity of the control room envelope boundary. Therefore, the staff developed a RAI regarding this matter.

Discussions on various topics were held with the licensee during an audit call on October 1, 2020. The NRC staff assessed the information from the audit to determine whether the information would be needed to support a regulatory finding, and therefore, needed to be submitted for review by the NRC staff.

### 3.0 RESULTS OF THE AUDIT

During the audit, the NRC staff confirmed information that supported statements made in the LAR. However, the staff identified additional information that is needed to support the staff's regulatory findings. Therefore, subsequent to the audit's conclusion, an RAI was sent to the licensee on November 17, 2020 (ADAMS Accession No. ML20322A441).

4.0 AUDIT PARTICIPANTS

NRC	TVA	Enercon
Kimberly Green	Russell Wells	Joel Riddle
Raul Hernandez-Figueroa	Jerry Thompson	Adam Edwards
Matthew Hamm	Ron Rogers	Patricia Furio
Yueh-Li (Renee) Li	Gordon Williams	Paul Schoepf
David Nold	Matt Smith	
Brian Wittick	Stuart Rymer	
	John Prangle	
	John Sterchi	

5.0 LIST OF DOCUMENTS AND MATERIALS PROVIDED IN THE ELECTRONIC READING ROOM

Document No.	Description
NPG-SPP-09.5, Revision 0015, Attachment 6	"Temporary Modifications Temporary Configuration Changes"
WBN-0-2019-031-001, Revision 0	"Temporary Chiller to Support Replacement of A-Train MCR Chiller"
WBN-0-2019-031-002, Revision 0	"Temporary Chiller to Support Replacement of B-Train MCR Chiller"
WBN-47W200-4-AC 004133670, Revision 19	Equipment Plan-EI 737.0 & EI 729.0
WBN-2-47W600-2-CC 055277853, Revision 3	Unit 2 Electrical Instruments and Controls
WBN-47W930-5-AC 003886276, Revision 16	Mechanical Heating, Ventilating and Air Conditioning
WBN-47W930-3-AC 003969024, Revision 42	Mechanical Heating, Ventilating and Air Conditioning
Calculation MDQ00003120090157, Revision 7	"Main Control Room Floor (EL. 755.0) Transient Temperature Analysis" using Gothic™ modelling
NPG-SPP-05.4, Revision 0008	"Chemical Traffic Control"
Unit 0, 1, & 2 Technical Instruction TI-65	"Breaching the Containment Annulus, ABSCE, or MCRHZ Pressure Boundaries"
MCRHZ – TI-65, Appendix	Breach Permit Log
WBN-47W200-3, Revision 16	Equipment Plan – EI 757.0 & EI 755.0
WBN-47W200-2, Revision 12	Equipment Plan – EI 772.0 & Above
2020 TomTom "Arial" Satellite View of WBN	Annotated to depict two potential temporary chiller locations with respect to MCR Fresh Air Intakes and Auxiliary Building Fresh Air Intakes

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 RHernandez, NRR  
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**ADAMS Accession No. ML21012A084**

**\*by e-mail**

OFFICE	NRR/DORL/LPL2-2/PM*	NRR/DORL/LPL2-2/LA*	NRR/DSS/SCPB/BC*
NAME	KGreen	BAbeywickrama	BWittick
DATE	01/11/2021	01/13/2021	12/15/2020
OFFICE	NRR/DEX/EMIB/BC*	NRR/DORL/LPL2-2/BC*	NRR/DORL/LPL2-2/PM*
NAME	ABuford	UShoop	KGreen
DATE	12/04/2020	01/26/2021	01/26/2021

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