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

November 6, 2017

10 CFR 50.73

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

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: **Licensee Event Report 390/2017-013-00, Incorrectly Adjusted Auxiliary Building Gas Treatment System Damper Leads to a Condition Prohibited by Technical Specifications**

This submittal provides Licensee Event Report (LER) 390/2017-013-00. This LER provides details concerning a condition where a damper which would not fully close resulted in a condition prohibited by the Technical Specifications (TS). This condition is being reported as a condition prohibited by TS in accordance with 10 CFR 50.73(a)(2)(i)(B).

There are no regulatory commitments contained in this letter. Please direct any questions concerning this matter to Kim Hulvey, WBN Licensing Manager, at (423) 365-7720.

Respectfully,

Paul Simmons
Site Vice President
Watts Bar Nuclear Plant

Enclosure
cc: See Page 2

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Watts Bar Nuclear Plant

NRC FORM 366 (04-2017) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Watts Bar Nuclear Plant, Unit 1	05000390	1 OF 5

4. TITLE

Incorrectly Adjusted Auxiliary Building Gas Treatment System Damper Leads to a Condition Prohibited by Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	06	2017	2017	- 013	- 00	11	06	2017	Watts Bar Nuclear Plant, Unit 2	05000391
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
100	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Dean Baker, Licensing Engineer	423-452-4589

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☒ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☐ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
12	13	2017

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On September 6, 2017, Watts Bar Nuclear Plant (WBN) identified that the vacuum relief line airflows did not meet acceptance criteria for the Auxiliary Building Gas Treatment System (ABGTS) for Train A during the performance of 0-SI-30-7-A, ABGTS Pressure Test. Troubleshooting of the low airflows identified an Auxiliary Building Secondary Containment Enclosure (ABSCE) Unit 2 General Ventilation intake damper 2-FCO-30-108 with approximately one inch gaps in the blade seals with the damper in the closed position. Preliminary investigation found that the damper linkage appeared to not be adjusted correctly to allow full closure of the damper blades following maintenance in May of 2017. The low vacuum relief line airflows resulted in the Train A ABGTS being inoperable, based on identified open ABSCE breaches, from July 7, 2017 to September 5, 2017. This time period is longer than that allowed by Technical Specification (TS) 3.7.12 for ABGTS, and is therefore a condition prohibited by TS.

The cause of the damper issue and corrective actions to reduce recurrence are under investigation and will be provided in a supplement to this report.

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Watts Bar Nuclear Plant, Unit 1	05000390	2017	- 013	- 00

NARRATIVE

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

Watts Bar Nuclear Plant (WBN) Unit 1 was at 100 percent rated thermal power (RTP) . WBN Unit 2 was also in Mode 1 at 100 percent power.

II. DESCRIPTION OF EVENT

A. Event Summary

On September 6, 2017, Watts Bar Nuclear Plant (WBN) identified that the vacuum relief line airflows did not meet acceptance criteria for the Auxiliary Building Gas Treatment System (ABGTS){EIIS:VF} for Train A during the performance of 0-SI-30-7-A, ABGTS Pressure Test. Troubleshooting of the low airflows identified an Auxiliary Building Secondary Containment Enclosure (ABSCE) Unit 2 General Ventilation intake damper 2-FCO-30-108 {EIIS:CDMP} with approximately one inch gaps in the blade seals with the damper in the closed position. Preliminary investigation found that the damper linkage appeared to not be adjusted correctly to allow full closure of the damper blades following maintenance in May of 2017. The low vacuum relief line airflows resulted in the Train A ABGTS being inoperable, based on identified open ABSCE breaches, from July 7, 2017 at 2030 Eastern Daylight Time (EDT) to September 5, 2017 at 1645 EDT. This time period is longer than that allowed by Technical Specification (TS) 3.7.12 for ABGTS, and is therefore a condition prohibited by TS.

This event is being reported to the Nuclear Regulatory Commission (NRC) under 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

B. Inoperable Structures, Components, or Systems that Contributed to the Event

No inoperable equipment contributed to this event.

C. Dates and Approximate Times of Occurrences

Date	Time	Event
5/19/17		Actuator associated with damper 2-FCO-30-108 replaced to address air leaks. A visual inspection of the damper by inspecting the blade seals through the ventilation manway was not performed. Only external checks were performed.
7/07/17	2030	ABSCE breach exceeds 63.9 square inches for Train A.
9/05/17	1645	ABSCE breach is less than 63.9 square inches for Train A .
9/06/17		During performance of 0-SI-30-7-A, Auxiliary Building Gas Treatment System Pressure Test Train A, the vacuum relief line airflows obtained did not meet the required acceptance criteria of greater than or equal to 1370 cubic feet per minute (cfm).
9/19/07	1609	Damper issue corrected by Work Order 119015649
10/06/17		A Past Operability Evaluation (POE) performed for this event determined that the A Train of ABGTS was inoperable from July 7, 2017 at 2030 EDT until September 5, 2017 at 1645 EDT.

D. Manufacturer and Model Number of Components that Failed During the Event

There were no failed components that contributed to this event.

E. Other Systems or Secondary Functions Affected

No other systems or secondary functions were affected.

F. Method of discovery of each Component or System Failure or Procedural Error

The issue was identified during periodic testing of the ABGTS required by TS.

G. Failure Mode and Effect of Each Failed Component

The cause of the equipment issue is under investigation.

H. Operator Actions

No actual event was ongoing related to this report.

I. Automatically and Manually Initiated Safety System Responses

Not applicable.

III. CAUSE OF THE EVENT

A. The cause of each component or system failure or personnel error, if known.

The cause of this issue is under investigation and will be provided in a supplement to this report.

B. The cause(s) and circumstances for each human performance related root cause.

The cause of this issue is under investigation and will be provided in a supplement to this report.

IV. ANALYSIS OF THE EVENT

The ABGTS and ABSCE serve a specified safety function when either WBN Unit 1 or Unit 2 are in Modes 1 through 4 by (1) providing a secondary containment barrier maintained under negative pressure during certain postulated accidents involving airborne radioactivity, and (2) providing contaminant removal sufficient to keep radioactivity levels in the air released to the environment low enough to assure compliance with the requirements of 10 CFR 100.

The ABGTS consists of two 100 percent redundant air cleanup units (ACUs), located in separate rooms in the Auxiliary Building (AB) adjacent to each reactor building. This system consists of two parallel ducts originating from exhaust ducting that normally serves the fuel handling and waste packaging areas. Each of these ducts leads directly to an ABGTS ACU and fan combination, which then exhausts the building air

directly to the shield building exhaust vent. Following an accident, potential radioactivity releases within the AB are processed by the ABGTS units prior to release to the environment.

ABGTS performs the primary safety-related function of maintaining the AB at a minimum negative pressure of -0.25 inches water gauge (wg) to assure that the guidelines in 10 CFR 100 and General Design Criteria (GDC) 19 are not exceeded. Sufficient air is drawn from the ABSCE to establish and maintain the desired building negative pressure. The negative pressure chosen for post-accident operation is sufficiently low to ensure that airborne contamination in the AB is not released to the environment without being processed by the ABGTS units. Although the maximum permissible ABSCE leakage rate is 9900 cubic feet per minute (cfm) at -0.25 inches wg with respect to the outside environment, ABGTS will maintain a minimum fan capacity of 9300 cfm at all times. This will allow for adequate airflow for a maximum allowable ABSCE infiltration rate of 7930 cfm, and margin for a postulated one inch service air line break (1370cfm) due to a Safe Shutdown Earthquake (SSE), at a negative differential pressure of -0.25 inches wg.

The inability of ABGTS Train A to meet the required greater than or equal to 1370 cfm total vacuum relief line airflow required by the design does not necessarily render ABGTS Train A incapable of performing its specified safety function during a Loss of Coolant Accident (LOCA) (maintaining ABSCE at a negative pressure, -0.25 inches wg and -0.5 inches wg). The difference between the actual vacuum relief measured value (corrected for pressure) and 1370 cfm (from a postulated one inch air line break) provides the margin for ABSCE breaching permits during plant operation. The ABSCE breach margin is calculated using ABGTS total flow, vacuum relief line flow, and AB pressures. Therefore, once either train of ABGTS's breach margin is exceeded that unit of ABGTS becomes inoperable and unable to perform its specified safety function.

Testing performed on September 6, 2017 showed the failure of damper 2-FCO-30-108 to fully close impacted the ability to accommodate the postulated one inch service air line break when the calculated breaches through the ABSCE exceeded 63.9 square inches for Train A. This breach margin was exceeded between July 7, 2017 at 2030 EDT and September 5, 2017 at 1645 EDT. Following correction of damper 2-FCO-30-108, the ABSCE breach margin increased to over 170 square inches.

V. ASSESSMENT OF SAFETY CONSEQUENCES

As described in the previous section, the ABGTS Train A was not able to perform its safety function for a design basis accident with a one inch service airline failure. The postulation of a seismic event and a Design Basis Event (DBE) are not assumed to occur concurrently, but are considered for the purposes of design and operability. The consequences of this event are judged to be low, and are not modeled in the plant Probabilistic Risk Assessment (PRA).

A. Availability of systems or components that could have performed the same function as the components and systems that failed during the event

Train B of ABGTS remained operable during this time period.

B. For events that occurred when the reactor was shut down, availability of systems or components needed to shutdown the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident

NARRATIVE

Train B of ABGTS remained operable during this time period.

C. For failure that rendered a train of a safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service

Train A of ABGTS was operable based on ABSCE breaches in effect when the condition of damper 2-FCO-30-108 was identified. The condition identified on September 6, 2017 was corrected on September 19, 2017.

VI. CORRECTIVE ACTIONS

This event was entered into the Tennessee Valley Authority (TVA) Corrective Action Program and is being tracked under Condition Report (CR) 1335791.

A. Immediate Corrective Actions

The issue improperly adjusted damper was corrected after identification.

B. Corrective Actions to Prevent Recurrence or to Reduce Probability of Similar Events Occurring in the Future

Corrective actions will be provided in a supplement to this report.

VII. PREVIOUS SIMILAR EVENTS AT THE SAME SITE

LER 390/2009-001 reported that Surveillance Instructions used to test the ABGTS were not adequate in that the closure of non-safety ventilation dampers may have masked the performance of safety related dampers. In addition, as part of this report, two failures of a temporary boundary door used to facilitate Unit 2 construction were reported. Corrective actions included revising procedures to ensure that non-safety dampers could not mask the performance of safety related dampers during testing. The event described in LER 390-2017-013 is different in that it is related to performance of post maintenance inspections, not surveillance procedures.

VIII. ADDITIONAL INFORMATION

None.

IX. COMMITMENTS

None.