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

May 13, 2016

10 CFR 50.73

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

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket No. 50-390

Subject: **Licensee Event Report 390/2016-005-00, Both Trains of Unit 1 Emergency Gas Treatment System Inoperable During Unit 2 Testing**

This submittal provides Licensee Event Report (LER) 390/2016-005-00. This LER provides details concerning an event where both trains of the Unit 1 Emergency Gas Treatment System were out of service simultaneously for less than 10 minutes. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(v). A supplement to this LER will be submitted by July 12, 2016

Please direct any questions concerning this matter to Gordon Arent, WBN Licensing Director, at (423) 365-2004.

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 (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet 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)

(See Page 2 for required number of digits/characters for each block)

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

4. TITLE

Both Trains of Unit 1 Emergency Gas Treatment System Inoperable During Unit 2 Testing

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
										05000
10	22	2015	2016	- 005 -	00	05	13	2016	FACILITY NAME	DOCKET NUMBER
										05000

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)
14	☐ 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)*
Thomas P. Morgan	423-365-1557

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	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☒ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☐ NO		07	12	2016

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

On March 14, 2016, Watts Bar Nuclear Plant (WBN) Unit 1 determined through engineering analysis that both trains of emergency gas treatment system (EGTS) were inoperable for 8 minutes, 10 seconds during preoperational testing of Unit 2 EGTS. The inoperability of A and B trains of Unit 1 EGTS took place on October 22, 2015, while Unit 1 was in Mode 1 and two trains of EGTS were required to be operable in accordance with technical specification (TS) limiting condition for operation (LCO) 3.6.9, "Emergency Gas Treatment System (EGTS)." At the time of the event, Unit 2 was in "no Mode," prior to initial fuel loading. With both trains of EGTS inoperable, the specified safety functions of Unit 1 EGTS were not capable of being performed. Therefore, this condition is being reported pursuant to 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D), "Event or Condition That Could Have Prevented Fulfilment of a Safety Function."

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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	2016	- 005	- 00

NARRATIVE

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

Watts Bar Nuclear Plant (WBN) Unit 1 was in Mode 1 at 14 percent rated thermal power (RTP). WBN Unit 2 was in "no Mode" prior to initial fuel loading.

II. DESCRIPTION OF EVENT

A. Event

On March 14, 2016, Watts Bar Nuclear Plant (WBN) Unit 1 determined through engineering analysis that both trains of emergency gas treatment system (EGTS) [EIIS: BH] were inoperable for 8 minutes, 10 seconds during preoperational testing of Unit 2 EGTS. The inoperability of A and B trains of Unit 1 EGTS took place on October 22, 2015, while Unit 1 was in Mode 1 and two trains of EGTS were required to be operable in accordance with technical specification (TS) limiting condition for operation (LCO) 3.6.9, "Emergency Gas Treatment System (EGTS)." At the time of the event, Unit 2 was in "no Mode," prior to initial fuel loading. With both trains of EGTS inoperable, the specified safety functions of Unit 1 EGTS were not capable of being performed. Therefore, this condition is being reported pursuant to 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D), "Event or Condition That Could Have Prevented Fulfilment of a Safety Function."

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

Train A and train B EGTS were concurrently inoperable for 8 minutes, 10 seconds on October 22, 2015.

C. Dates and Approximate Times of Occurrences

Date	Time	Event
10/17/15	1007 EDT	WBN Unit 1 entered Mode 4 coming out of refueling outage 13
10/22/15	0118 EDT	Both trains Unit 1 EGTS inoperable due to Unit 2 test configuration
10/22/15	0126 EDT	Unit 2 EGTS train A suction dampers closed.

D. Manufacturer and Model Number of Components that Failed

There were no failed components associated with this event.

E. Other Systems or Secondary Functions Affected

There were no systems or secondary functions affected by this event.

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

This issue was identified during the incorporation of Unit 2 EGTS system testing requirements into WBN engineering documents.

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G. Failure Mode and Effect of Each Failed Component

There were no component failures associated with this event.

H. Operator Actions

There was no actual event requiring operator actions.

I. Automatically and Manually Initiated Safety System Responses

There were no automatic or manual system responses associated with this event.

III. CAUSE OF THE EVENT

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

There was no component of system failure associated with this event.

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

The cause of this event was that engineers were assigned tasks without the requisite knowledge and experience to fully understand all issues that needed to be addressed for a first of a kind testing on a complex shared system. This resulted in inadequate special requirements to maintain Unit 1 EGTS operable during the Unit 2 preoperational testing.

IV. ANALYSIS OF THE EVENT

On October 22, 2015, both trains of Unit 1 EGTS were inoperable for 8 minutes, 10 seconds due to inadequate special requirements to maintain Unit 1 EGTS operable during Unit 2 EGTS testing. As a result, the specified safety functions of EGTS could not be met. The specified safety functions of EGTS are:

1. To keep the air pressure within each Shield Building annulus below atmospheric pressure at all times in which the integrity of that particular containment is required.
2. To reduce the concentration of radioactive nuclides in annulus air that is released to the environs during a loss of coolant accident (LOCA) in either reactor unit to levels sufficiently low to keep the site boundary and low population zone (LPZ) dose rates below the 10 CFR 100 values.
3. To withstand the safe shutdown earthquake.
4. To provide for initial and periodic testing of the system capability to function as designed.

EGTS is a dual unit system. TS LCO 3.6.9 requires both trains of EGTS be Operable in Modes 1, 2, 3, and 4 and TS 3.6.15 requires that the Shield Building shall be Operable in Modes 1, 2, 3, and 4. The EGTS must be capable of producing the correct flow and pressure requirements relative to the annulus, which ensures that the EGTS is capable of performing Specified Safety Function 2 described above to keep annulus releases below the 10 CFR 100 limits. A single train of EGTS is capable of drawing suction on the annulus of the unit undergoing a LOCA such that the specified safety functions of EGTS are met. Annulus in-leakage for the suction path in service is assumed to meet surveillance requirement (SR) 3.6.15.4 in-leakage limit of ≤ 250 scfm.

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Because in-leakage from the Unit 2 annulus was unknown, and both EGTS trains were aligned to the Unit 2 annulus for 8 minutes, 10 seconds, both trains should have been declared inoperable on Unit 1 which would have required that Unit 1 enter TS LCO 3.0.3.

A demand for EGTS did not exist during this timeframe. During times where individual trains of EGTS were inoperable, the conditions existed for less than the TS LCO 3.6.9 required action completion times. In addition, LCO 3.0.3 required action completion times were not exceeded when both trains of EGTS were inoperable.

V. ASSESSMENT OF SAFETY CONSEQUENCES

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

With both trains inoperable, the specified safety functions of Unit 1 EGTS could not have been performed for 8 minutes, 10 seconds. The WBN probabilistic risk model does not consider EGTS in core damage and large early release frequencies. As a result, any risk increase associated with a short-duration misalignment of EGTS is considered to be very small. In addition, special requirements were imposed during the Unit 2 EGTS test for operators to close dampers to isolate Unit 2 from the suction path of EGTS, should it become necessary to prevent Unit 2 testing from adversely impacting Unit 1 operation.

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

Not applicable. Watts Bar Unit 1 was in Mode 1 at the time of this event.

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

There was not an actual failure associated with this event. In the engineering evaluation performed subsequent to the event, WBN demonstrated that both trains of Unit 1 EGTS were inoperable for 8 minutes, 10 seconds.

VI. CORRECTIVE ACTIONS

This event was entered into the Tennessee Valley Authority Corrective Action Program and is being tracked under condition report 1143076.

A. Immediate Corrective Actions

This issue was identified subsequent to the inoperability of both trains of Unit 1 EGTS. Condition report 1143076 was initiated, and a past operability evaluation performed.

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B. Corrective Actions to Prevent Recurrence

Watts Bar Unit 2 EGTS has been turned over to plant operations, and is controlled under the WBN Unit 2 TS. Testing requirements for EGTS were revised to support dual unit operation, including appropriate controls to ensure that EGTS on the unit not undergoing testing will remain operable.

VII. ADDITIONAL INFORMATION

A. Previous similar events at the same plant

None.

B. Additional Information

None.

C. Safety System Functional Failure Consideration

Additional engineering analysis is ongoing to determine if this event constituted a safety system functional failure in accordance with NEI 99-02. A supplement to this LER will be submitted by July 12, 2016.

D. Scrams with Complications Consideration

None.

VIII. COMMITMENTS

None.