



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

July 14, 2020
WBL-20-027

10 CFR 50.73

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

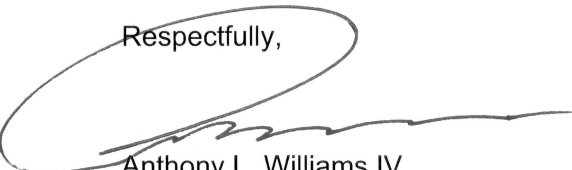
Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Licensee Event Report 390/2020-002-00, Automatic Start of the
Emergency Diesel Generators due to an Equipment Failure During
Transfer of Power Source for the 1B-B Shutdown Board**

This submittal provides Licensee Event Report (LER) 390/2020-002-00. This LER provides details concerning an automatic start of the Emergency Diesel Generators (EDGs) when the transfer of the 1B-B 6.9 kV Shutdown Board (SDBD) from the maintenance feed malfunctioned, resulting in the loss of power to the SDBD. This condition is being reported as a safety system actuation of the EDGs in accordance with 10 CFR 50.73(a)(2)(iv)(A).

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

Respectfully,



Anthony L. Williams IV
Site Vice President
Watts Bar Nuclear Plant

Enclosure
cc: See Page 2

U.S. Nuclear Regulatory Commission
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July 14, 2020

cc (Enclosure):

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



LICENSEE EVENT REPORT (LER)

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-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name

Watts Bar Nuclear Plant, Unit 1

2. Docket Number

05000390

3. Page

1 OF 5

4. Title

Automatic Start of the Emergency Diesel Generators due to an Equipment Failure During Transfer of Power Source for the 1B-B Shutdown Board

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
05	20	2020	2020	- 002	- 00	07	14	2020	Watts Bar Nuclear Plant, Unit 2	05000391
									Facility Name	Docket Number
									NA	05000
9. Operating Mode			11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)							
None			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. Power Level			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
000			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
					<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact

Dean Baker, Licensing Engineer

Telephone Number (Include Area Code)

(423) 452-4589

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
D	EB	52	GE	Y					

14. Supplemental Report Expected

☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No

15. Expected Submission Date

Month	Day	Year
N/A	N/A	N/A

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On May 20, 2020, at 0521 Eastern Daylight Time (EDT), with Watts Bar Nuclear Plant (WBN) Unit 1 defueled and Unit 2 in Mode 3, an actuation of the Emergency Diesel Generator (EDG) System occurred while transferring the 1B-B 6.9kV Shutdown Board (SDBD) from the maintenance feed to its normal power supply. All safety systems responded as designed.

The cause of the event was determined to be the actuating arm on the maintenance supply breaker that engages the fast transfer switch associated with the control circuitry for the normal supply breaker was not properly aligned. This resulted in loss of power to the 1B-B 6.9 kV SDBD and the start of all four EDGs. The 1B-B 6.9 kV SDBD was repowered from the 1B-B EDG, and restored to offsite power at 0721. Corrective actions were put in place to revise the maintenance procedures for overhaul and installation of 6.9 kV breakers to clarify checks of the fast transfer switch and breaker actuating arm.

This condition is being reported as a safety system actuation in accordance with 10 CFR 50.73(a)(2)(iv)(A).

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. FACILITY NAME

Watts Bar Nuclear Plant, Unit 1

2. DOCKET NUMBER

05000390

3. LER NUMBER

YEAR

2020

SEQUENTIAL
NUMBER

- 002

REV
NO.

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NARRATIVE**I. Plant Operating Conditions Before the Event**

Watts Bar Nuclear Plant (WBN) Unit 1 was at defueled. Unit 2 was in Mode 3.

II. Description of Event**A. Event Summary**

On May 20, 2020, at 0521 Eastern Daylight Time (EDT), with Watts Bar Nuclear Plant (WBN) Unit 1 defueled and Unit 2 in Mode 3, an actuation of the Emergency Diesel Generator (EDG) System {EIS:EK} occurred while transferring the 1B-B 6.9kV Shutdown Board (SDBD) {EIS:EB} from the maintenance supply to its normal power supply. All safety systems responded as designed.

This event is being reported to the Nuclear Regulatory Commission (NRC) under 10 CFR 50.73(a)(2)(iv)(A) as a safety system actuation of the Emergency Diesel Generators (EDGs).

B. Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event

No inoperable structures, systems, or components contributed to this condition.

C. Dates and approximate times of occurrences

<u>Date</u>	<u>Time (EDT)</u>	<u>Event</u>
12/19	N/A	Maintenance Feeder breaker {EIS:BKR} overhauled in accordance with plant procedures.
5/20/20	N/A	Overhauled maintenance feeder breaker inserted into the 1B-B SBDB
5/20/20	0521	1B-B 6.9 kV SBDB inadvertently de-energized with 1B EDG auto start and loading the 1 B-B 6.9 kV Shutdown Board. Emergency Diesel Generators 1A-A, 2A-A, and 2B-B Auto Started and are Unloaded. 1-SI-211-1-B was in progress.
5/20/20	0521	Operations enters Abnormal Operating Instruction 0-AOI-43.02, Loss of Unit 1 Train B Shutdown Boards
5/20/20	0604	1A-A EDG secured
5/20/20	0609	2A-A EDG secured
5/20/20	0612	2B-B EDG secured
5/20/20	0721	1B-B SDBD placed on offsite power
5/20/20	0901	Exited 0-AOI-43.02 after energizing the 1B-B SDBD from the alternate supply.

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NARRATIVE**D. Manufacturer and model number of each component that failed during the event**

The component that failed is a General Electric Fast Transfer Switch, Model BZ-2RW82299-A2 {EIS:52} associated with a General Electric (GE) Magneblast breaker.

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

Following the event, a troubleshooting team was assembled to determine the cause of the failure of the 1B-B SDBD to properly transfer. The team identified that the actuation arm of the maintenance supply breaker was not properly aligned with the fast transfer switch.

G. Failure mode, mechanism, and effect of each failed component

Investigation found the actuation arm on the maintenance supply breaker that engages the fast transfer switch associated with control circuitry for the normal supply breaker was not properly aligned. This prevented actuation of the fast transfer switch, and therefore the switch did not function to keep the normal supply breaker from closing while the maintenance supply breaker was still closed.

H. Operator actions

Operators followed plant procedures, repowered the 1B-B shutdown board from offsite power, and secured the EDGs.

I. Automatically and manually initiated safety system responses

When the 1B-B SDBD lost power, the EDGs automatically started. The 1B-B SDBD loaded onto the 1B-B EDG as designed. All other 6.9kV SDBD remained powered from offsite power.

III. Cause of the Event**A. Cause of each component or system failure or personnel error**

The apparent cause of the actuating arm to fast transfer switch alignment was determined to be inadequate procedural guidance to check/test the switch alignment in relation to final travel of the breaker actuating arm.

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CONTINUATION SHEET**

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NARRATIVE**B. Cause(s) and circumstances for each human performance related root cause**

A human performance root cause was not identified for this event.

IV. Analysis of the Event

When this event occurred, the plant was performing procedure 1-SI-211-1-B, 18 Month 6.9 KV Shutdown Board 1B-B Automatic and Manual Transfer Tests. This Surveillance Instruction (SI) provides detailed steps to verify manual and automatic transfer operability of offsite circuits supplying the 6.9 kV Shutdown Boards 1B-B. During performance of Section 6.4.2, operations attempted to transfer the 1B-B SDBD from maintenance supply to its normal power supply. When the handswtich for closing the normal supply breaker was taken to close, the normal power supply breaker closed prematurely, resulting in tripping of both the normal and maintenance supply breakers, and loss of power to the 1B-B SDBD. All four EDGs started, and the 1B-B SDBD was restored by its associated Diesel Generator. Operations personnel were able to properly respond to the event without incident and restored offsite power to the 1 B-B SDBD.

V. Assessment of Safety Consequences

When this event occurred, Unit 1 was defueled and Unit 2 was stable in Mode 3 and had been offline for more than one week. This condition is fully bounded by a loss of offsite power described in the Updated Final Safety Analysis Report Chapter 15. The risk from this event is considered very low.

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

Not applicable.

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.

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

Not applicable.

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NARRATIVE**VI. Corrective Actions**

These events were entered into the Tennessee Valley Authority (TVA) Corrective Action Program and are being tracked under Condition Report (CR) 1609672.

A. Immediate Corrective Actions

The breaker from the maintenance supply was quarantined until repairs were completed. The 1B-B SDBD was powered from the 1B-B EDG, and transferred back to offsite power two hours later.

B. Corrective Actions to Prevent Recurrence or to reduce probability of similar events occurring in the future

Corrective actions were put in place to revise the maintenance procedures for overhaul and installation of 6.9 kV breakers to clarify checks of the fast transfer switch and breaker actuating arm.

VII. Previous Similar Events at the Same Site

LER 390/2017-004-00 submitted on June 29, 2017 documents an event where the reactor was manually tripped as a result of a failed Reactor Coolant Pump power transfer. While the June 2017 event is somewhat similar to this event, the underlying cause was different.

VIII. Additional Information

There is no additional information.

IX. Commitments

There are no new commitments.