



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

November 12, 2019

10 CFR 50.73

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

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: **Licensee Event Report 50-259/2019-002-00**

The enclosed Licensee Event Report provides details of the inoperability of security doors requiring keycard access, which were impacted by a lightning strike. The Tennessee Valley Authority is submitting this report in accordance with Title 10 of the Code of Federal Regulations 50.73(a)(2)(ii)(B), as an event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety.

There are no new regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact J. L. Paul, Nuclear Site Licensing Manager, at (256) 729-2636.

Respectfully,



S. M. Bono
Site Vice President

Enclosure: Licensee Event Report 50-259/2019-002-00 – Unanalyzed Condition Due to Inoperable Security Doors Following a Lightning Strike

cc (w/ Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant
NRC Project Manager - Browns Ferry 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-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.

1. Facility Name

Browns Ferry Nuclear Plant, Unit 1

2. Docket Number

05000259

3. Page

1 OF 6

4. Title

Unanalyzed Condition Due to Inoperable Security Doors Following a Lightning Strike

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	10	2019	2019	002	00	11	12	2019	Browns Ferry Nuclear Plant, Unit 2	05000260
									Browns Ferry Nuclear Plant, Unit 3	05000296
9. Operating Mode			11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)							
1			<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 checked="" 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 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)	
100			<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

Ryan Coons, Licensing Engineer

Telephone Number (Include Area Code)

256-729-2070

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
C	IA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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 September 10, 2019, at approximately 1502 Central Daylight Time (CDT) a lightning strike caused a power surge which disabled signal repeaters between the Local Intelligence Units (LIUs) of some security doors and the monitoring stations at Browns Ferry Nuclear Plant (BFN). At 1830 CDT, it was discovered that some of the oncoming night shift personnel could not access particular areas which required keycard access. An extent of condition check conducted at 1934 CDT determined that access to the 1A and 3A Electric Board Rooms, which contain remote shutdown panels and Fire Safe Shutdown (FSS) equipment, was prohibited for the night shift personnel. This condition is reportable under Title 10 of the Code of Federal Regulations (10 CFR) 50.73(a)(2)(ii)(B) as an event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. Specifically, this condition impacted the ability of Operators to perform their required actions in FSS procedures within prescribed time limits if a fire had occurred.

The event was caused by lightning strike, which created a power surge, resulting in a security equipment communications failure. Access was restored to all plant areas at 2106 CDT. The immediate corrective action was to have Security and Operations personnel reset the malfunctioning equipment. This cleared the error and allowed the LIUs of the affected security doors to receive roster updates. As a corrective action to reduce the probability of recurrence, Site Security created a constantly-activated, all-access emergency keycard, as a contingency against future door LIU communication failures. SSI-16.1, "Compensatory Measures," is being revised to proceduralize the emergency keycard's use.

**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-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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Browns Ferry Nuclear Plant, Unit 1	05000259	2019	- 002	- 00

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

At the time of discovery, Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3 were all in Mode 1 at approximately 100 percent power.

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

On September 10, 2019, at approximately 1502 Central Daylight Time (CDT) a lightning strike caused a power surge which disabled some of the security [IA] door [DR] card reader system equipment at Browns Ferry Nuclear Plant (BFN). At 1830 CDT, it was discovered that some of the oncoming night shift personnel could not access particular areas which required the use of security card readers. However, this did not affect access to plant areas for personnel who were already within protected area. An extent of condition check conducted at 1934 CDT determined that the access restriction only applied to night shift personnel attempting entry into the 1A and 3A Electric Board Rooms (EBRs), which contain remote shutdown panels and Fire Safe Shutdown (FSS) equipment.

The event was caused by lightning strike, which created a power surge. Access was restored to all plant areas at 2106 CDT. No plant events occurred during the timeframe which required access to the 1A and 3A EBRs.

The Tennessee Valley Authority (TVA) is submitting this report in accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.73(a)(2)(ii)(B) as any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. Specifically, this condition impacted the ability of Operators to perform their required actions in FSS procedures within prescribed time limits.

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

There were no structures, systems, or components (SSCs) whose inoperability contributed to this event.

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Browns Ferry Nuclear Plant, Unit 1	05000259	2019	- 002	- 00

NARRATIVE**C. Dates and approximate times of occurrences**

Date and Approximate Times	Occurrence
September 10, 2019, 1502 CDT	A lightning strike created a power surge which disabled some signal repeaters between the Local Intelligence Units (LIUs) of some security doors and the monitoring stations.
September 10, 2019, 1830 CDT	Oncoming night shift personnel discover that they are unable to access some areas which require keycard access.
September 10, 2019, 1934 CDT	Analysis reveals that the access restriction was limited to the 1A and 3A EBRs.
September 10, 2019, 2106 CDT	Access was restored to all plant areas.

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

Details of the disabled signal repeaters are considered to be Security-Sensitive or Safeguards Information, and have been omitted from this report.

E. Other systems or secondary functions affected

No other systems or secondary functions were affected by this event.

F. Method of discovery of each component or system failure or procedural error

The failure of the signal repeaters was self-revealing when the oncoming night shift personnel discovered that they could not access the 1A and 3A EBRs.

G. The failure mode, mechanism, and effect of each failed component

A power surge from a lightning strike disabled signal repeaters between the LIUs of some security doors and the monitoring stations. This resulted in the 1A and 3A EBR security doors failing to receive roster updates, rendering these rooms inaccessible to oncoming night shift personnel.

H. Operator actions

There were no operator actions associated with this event.



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Browns Ferry Nuclear Plant, Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REV NO.
		2019	- 002	- 00

NARRATIVE

I. Automatically and manually initiated safety system responses

No safety systems were initiated during this event.

III. Cause of the event

A. Cause of each component or system failure or personnel error

The direct cause of this event was a power surge, caused by a lightning strike.

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

There were no human performance related root causes associated with this event.

IV. Analysis of the event

Massive power surges, such as those caused by lightning strikes, are known to cause aberrant and unpredictable equipment failures. Previous evaluations had determined that parts of BFN were susceptible to lightning strikes, and recommended installing additional protection on the data and signal lines for the LIUs, Central Alarm Station, and Secondary Alarm Station. Design Change Notice (DCN) 67728 was initiated to support lightning mitigation efforts. However, this DCN has not been fully implemented.

V. Assessment of Safety Consequences

This event rendered the security doors leading to the 1A and 3A EBRs inoperable. This inoperability could have potentially impacted the ability to perform required actions in FSS procedures. This security network failure would still have allowed access to the Operators who were already on-shift inside the PA, due to the LIU's stored access information.

A failure of a LIU or its communication with the monitoring stations, without a loss of AC power, could result in the magnetic lock failing closed and secured. Security personnel would not be able to electronically open the security door remotely from one of the monitoring stations. However, this deficiency is mitigated because a fire significant enough to require FSS entry conditions would cause the LIU and/or the magnetic lock to lose its AC power supply. A LIU and/or magnetic lock which loses its 120 VAC power supply would de-energize, and its door would fail open, so there would be no interruption or delay in implementing required Operator actions.

Therefore, there is reasonable assurance that required recovery actions could have been completed as required. In a fire event, a security system network or circuit failure would not impact the ability to perform required Operator actions within their required timeframes. The bounding estimates of a preliminary risk evaluation indicate that this event has a low risk significance, due to its short duration.

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NARRATIVE

Based on the above, the TVA has concluded that sufficient systems were available to provide the required safety functions needed to protect the health and safety of the public.

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

During this event, day shift personnel remained capable of accessing the affected security doors. Only oncoming night shift personnel were affected, since the disabled signal repeaters prevented the door's LIUs from receiving roster updates from the plant computer.

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

This event did not occur when any reactor was shutdown.

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

No safety systems were rendered inoperable as a result of this event. However, access to the 1A and 3A EBRs was unavailable to night shift personnel for approximately 6 hours on September 10, 2019, from 1502 CDT until 2106 CDT.

VI. Corrective Actions

Corrective Actions are being managed by the TVA's corrective action program under CRs 1548033, 1548094 and 1548927.

A. Immediate Corrective Actions

Security and Operations personnel reset the malfunctioning equipment, which allowed the LIUs to receive their roster updates. This action restored normal access to the 1A and 3A EBRs.

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

Site Security created a constantly-activated, all-access emergency keycard, as a contingency against future signal repeater failures. SSI-16.1, "Compensatory Measures," is being revised to proceduralize the emergency keycard's use.



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NARRATIVE

VII. Previous Similar Events at the Same Site

A search of BFN Licensee Event Reports (LERs) for Units 1, 2, and 3 within the last three years identified no previous events involving security door inoperability. Lightning strikes have historically been a recurring issue at BFN, but there have been no incidents within the past five years.

VIII. Additional Information

There is no additional information.

IX. Commitments

There are no new commitments.