November 20, 2023
L-2023-166
10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2023-03-00
Date of Event: September 22, 2023

Grid Disturbance in Switchyard Causes Automatic Reactor Trip

The attached Licensee Event Report 2023-03 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Respectfully,

for

Dianne Strand
General Manager, Regulatory Affairs

Attachment

cc: Turkey Point NRC Senior Resident Inspector
Turkey Point Station NRC Program Manage

NRC FORM 366 (10-01-2023) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB: NO. 3150-0104 | EXPIRES: 03/31/2024

LICENSEE EVENT REPORT (LER)

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name		2. Docket Number	3. Page
Turkey Point Unit 3	■ 050 ☐ 052	00250	1 OF 2

4. Title

Grid Disturbance in Switchyard Causes Automatic Reactor Trip

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved		
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	☐ 050	Docket Number
09	22	23	23	- 03 -	00	11	20	23	N/A		
									Facility Name: N/A	☐ 052	Docket Number

9. Operating Mode	10. Power Level
1	100%

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Bob Murrell	3196519496

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

Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS
C	FK	87	W120	Y					

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On September 22, 2023, with Unit 3 at 100% power, a grid disturbance caused by a lightning strike in the switchyard resulted in a generator lock out and subsequent turbine trip. The Reactor Protection System (RPS) automatically actuated as a result of the turbine trip. The automatic trip was uncomplicated with systems responding normally post-trip, including an expected Auxiliary Feedwater (AFW) actuation. Subsequent analysis identified that due to the magnitude of the lightning strike, an induced voltage was created through the switchyard ground grid that arced across the relay contact that drives the string bus differential relay, resulting in a generator lockout. Corrective actions include replacement of the affected relay as well as a review of the ground grid and lightning protection scheme. This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) for any event or condition that resulted in the manual or automatic actuation of the RPS and AFW.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2024

1. FACILITY NAME		2. DOCKET NUMBER	YEAR	SEQUENTIAL NUMBER	
Turkey Point Unit 3	■ 050 ☐ 052	00250	23	- 03	

NARRATIVE

Description of Event

On September 22, 2023, at 1819 EDT, with Unit 3 at 100% power, a grid disturbance in the switchyard [EIIS: FK] caused a contact [EIIS: 93] to be bypassed in the string bus differential relay [EIIS: 87]. This actuated a generator [EIIS: GEN] lockout, which then tripped the turbine {EIIS: TRB]. Upon the turbine trip, the RPS [EIIS: JE] automatically actuated. The trip was uncomplicated with systems responding normally, including the actuation of the AFW system [EIIS: BA] to remove decay heat. This is an expected condition after reactor trips. This licensee event report is being reported pursuant of 10 CFR 50.73(a)(2)(iv)(A) for any event or condition that resulted in the manual or automatic actuation of the RPS and AFW. In addition, there were no inoperable Structures, Systems, or Components that contributed to this event.

Cause of Event

The magnitude of the lightning strike caused a larger than normal voltage difference between the switchyard and plant ground grids. Because the string bus differential relay is tied to the switchyard ground system and the generator lockout is tied to the plant ground system, an induced voltage was created that arced across the differential relay contact. This initiated the generator lockout and ultimately the actuation of RPS. The was relay was manufactured by Westinghouse.

Safety Significance

The plant trip was uncomplicated with systems responding as expected post-trip. In response to the expected low steam generator level, emergency feedwater actuated as expected. This event did not result in a Safety System Functional Failure.

Corrective Actions

1. The string bus differential relay has been replaced.
2. Ground grid and lightning protection scheme will be reviewed as well as additional planned actions in accordance with the corrective action program.

Similar Events

A review of events over the past 5 years did not identify any previous events that involved the same underlying cause of this event.