



L-2016-014
10 CFR § 50.73
January 19, 2016

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

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2015-001-00
Date of Event: November 18, 2015
Diesel Generator Start Resulting From Switchyard Protective Relay Actuation

The attached Licensee Event Report 05000250/2015-001-00 is submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) due to automatic actuation of the emergency ac power system.

If there are any questions, then please call Mr. Mitch Guth at 305-246-6698.

Sincerely,

A handwritten signature in black ink, appearing to read 'CD', with a long horizontal line extending to the right.

Chris Domingos
Plant General Manager
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

IEZZ
NRR



LICENSEE EVENT REPORT (LER)

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

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.

1. FACILITY NAME

Turkey Point Unit 3

2. DOCKET NUMBER

05000250

3. PAGE

1 of 3

4. TITLE

Diesel Generator Start Resulting From Switchyard Protective Relay Actuation

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
11	18	2015	2015	001	00	1	19	2016	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
5	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
0%	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71 (a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71 (a)(5)
	<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)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Mitch Guth	305-246-6698

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED YES (If yes, complete 15. EXPECTED SUBMISSION DATE) X NO	15. EXPECTED SUBMISSION DATE		
	MONTH	DAY	YEAR

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

On November 18, 2015 at approximately 23:33 hours with Unit 3 in Mode 5 during a refueling outage, the 3B Emergency Diesel Generator (EDG) automatically started and loaded on the 3B bus. The cause of the EDG start was a loss of offsite power to the 3A and 3B 4160V busses when the supply breakers to the Unit 3 Startup Transformer automatically opened due to an unexpected protective relay actuation in the Unit 3 switchyard. When the 3A and 3B busses were deenergized, the 3B EDG re-energized the 3B bus, but the 3A sequencer was out of service for preplanned work so the 3A bus was not immediately reenergized. The unit remained in Mode 5 with core decay heat removal provided by the 3B Residual Heat Removal loop. The cause of the event was the unexpected actuation of the protective relay during switchyard work. The automatic EDG start is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A).



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

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DESCRIPTION OF THE EVENT

On November 18, 2015 at approximately 23:33 hours with Unit 3 in Mode 5 during a refueling outage (RFO), a valid actuation signal was generated for the 3A and 3B Emergency Diesel Generators (EDGs) [EIS: EK, DG] when the supply breakers [EIS: FK, BKR] to the Unit 3 Startup Transformer (SUT) [EIS: EA, XFMR] automatically opened resulting in a loss of offsite power to the 3A and 3B 4160 V buses [EIS: EA, BU]. The loss of offsite power (LOOP) was caused by an unexpected actuation of the Breaker Failure Trip relay [EIS: FK, 87] protection scheme in the Turkey Point switchyard. The 3B Emergency Diesel Generator (EDG) automatically started as required in response to the busses being deenergized. The 3B bus was automatically sequenced on to the 3B EDG. The 3A sequencer was out of service for preplanned work during the event requiring the 3A EDG to be manually started and connected to the 3A bus. The unit remained in Mode 5 with core decay heat removal provided by the 3B Residual Heat Removal loop [EIS: BP, P].

Event Notification No. 51551 was made to the NRC Operations Center for both the declaration of an unusual event and for a valid actuation of the emergency ac electrical power system in accordance with 10 CFR 50.72(b)(3)(iv)(A). This report is in accordance with 10 CFR 50.73(a)(2)(iv)(A) due to valid actuations of the emergency ac power system.

CAUSES OF THE EVENT

The direct cause of the Unit 3 LOOP was actuation of the GE-B30 Breaker Failure Trip relay protection scheme. Subsequent investigation revealed that a combination of conditions resulted in a spurious trip of the protective relay: 1) a historical modification in the switchyard by the transmission system operator did not properly isolate abandoned circuits which resulted in a ground in the circuit; 2) the presence of long unshielded copper conductors in the control circuits; and 3) a new relay being installed during the RFO that is more sensitive. During a switchyard switching evolution, a ground signal was introduced on the switchyard dc system which, coupled with the long unshielded copper conductor, initiated the spurious trip of the new relay.

ANALYSIS OF THE EVENT

During the refueling outage, the Unit 3 SUT Breaker Failure Trip protection scheme was modified by the transmission system operator to physically separate it from the Unit 4 SUT protection scheme which were both housed in a common panel [EIS: FK, PL] in the switchyard. A new panel and digital relays were installed to update the system, eliminating the electromechanical relays [EIS: FK, 87].

Subsequent troubleshooting identified the presence of a dc ground on switchyard breaker [EIS: FK, BKR] 8W43 that was abandoned in 2006, although the control power circuitry terminations in breaker 8W43 were not removed. Further contributing to this event is the fact that the new GE-B30 digital relay is more sensitive than the electromechanical relay it replaced, and that the existing unshielded copper cabling in the Breaker Failure Trip relay circuit made it more susceptible to interference. Troubleshooting



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discovered that the long cable runs of unshielded copper wire used for the dc inputs had an induced voltage. Together, these reductions in operating margin contributed to the unexpected actuation of the GE-B30 Breaker Failure Trip protection during the implementation of the switching order on November 18, 2015.

ANALYSIS OF SAFETY SIGNIFICANCE

At the time of the event, Unit 3 was in Mode 5 following a core reload. The 3B EDG automatically started as required in response to the LOOP. The 3B bus was automatically sequenced on to the 3B EDG. The 3A sequencer was out of service during the event requiring the 3A EDG to be manually started and connected to the 3A bus. The unit remained in Mode 5 with decay heat removal provided by the 3B Residual Heat Removal loop. Plant response was as expected. All systems responded as designed. As a result, the safety significance of the event is considered to be low.

CORRECTIVE ACTIONS

Corrective actions are described in condition report AR 2092653 and include:

1. Completed implementation of a permanent design change via EC 285281 for Unit 3 that eliminated the Breaker Failure Trip protection scheme provided by the GE-B30 relay.
2. Strengthening the FPL process for abandoning equipment in the nuclear switchyard.
3. Performance of an extent of cause review on abandoned equipment in the switchyard for items left connected to operating equipment.

ADDITIONAL INFORMATION

EIIS Codes are shown in the format [IEEE system identifier, component function identifier, second component function identifier (if appropriate)].

FAILED COMPONENTS IDENTIFIED: None.

PREVIOUS SIMILAR EVENTS: None in the last five years.