FPL.

L-2013-194
10 CFR § 50.73
June 18, 2013

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

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 2013-002-00
Reactor Trip Due to Loss of Offsite Power Resulting From Generator Testing

The attached Licensee Event Report 05000251/2013-002-00 is submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A) due to safety system actuations and 10 CFR 50.73(a)(2)(v)(D) because primary power was lost to accident mitigation systems for approximately 30 minutes.

If there are any questions, please call Mr. Robert J. Tomonto at 305-246-7327.

Very truly yours,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Attachment

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

Florida Power & Light Company
9760 SW 344th St., Florida City, FL 33035

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

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 Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resourse@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)

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4. TITLE

Reactor Trip Due to Loss of Offsite Power Resulting From Generator 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
4	19	2013	2013	- 002 -	00	6	18	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

29

10. POWER LEVEL

1

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)0
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☒ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Paul F. Czaya	305-246-7150

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

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On April 19, 2013 with Unit 4 in Mode 1 at approximately 29% of rated power, a reactor trip occurred as a result of degraded voltage at the 480V load centers. Upon receipt of the degraded voltage signal, loads were shed on the vital buses, and both Emergency Diesel Generators started and repowered the buses. The reactor tripped due to the loss of the Reactor Coolant Pumps during bus load shedding. All control rods inserted. The unit stabilized via natural circulation in Mode 3. The Auxiliary Feedwater System initiated to maintain water level in the steam generators. Offsite power was restored to the vital buses in approximately 30 minutes. The event was initiated by lowered exciter voltage during generator testing after an extended power uprate outage to obtain data to establish generator protection relay settings. The use of a test instruction instead of a plant test procedure for the test, and inadequate risk recognition by station personnel were detemined to be the root causes. Corrective actions include eliminating the option to use test instructions for controlling plant operation, and developing and implementing a comprehensive program on risk recognition and management.

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DESCRIPTION OF THE EVENT

On April 19, 2013 at approximately 1721 hours, with Unit 4 in Mode 1 at approximately 29% rated thermal power, a reactor [AC, RCT] trip occurred as a result of degraded voltage at the 480V load centers (LC) [ED, BU]. At the time, 3rd harmonic main generator [EL] testing was in progress. Prior to the reactor trip, power to the Unit 4 vital electrical buses [EB, BU] was via the Auxiliary Transformer [EA, XFMR]. Upon receipt of the degraded voltage signal, loads were shed on the vital buses, and both Emergency Diesel Generators (EDG) [EK, DG] started and loaded onto the 4A and 4B 4kV buses. The reactor tripped due to the loss of the Reactor Coolant Pumps [AB, P] during bus load shedding. All control rods inserted.

Core cooling was maintained via natural circulation in Mode 3. The Auxiliary Feedwater (AFW) System [BA] initiated to maintain water level in the steam generators [SB, SG]. Spent fuel pool (SFP) cooling [DA] was lost for approximately 40 minutes. Offsite power was restored to the vital buses in approximately 30 minutes. There was no impact on Unit 3.

An Unusual Event (UE) was declared at approximately 1730 due to a loss of offsite power (LOOP) for greater than 15 minutes. Event Notification 48948 reported the UE, Reactor Protection System (RPS), EDG and AFW actuations, and the LOOP to accident mitigation systems.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) because of RPS, EDG and AFW System actuations, and 10 CFR 50.73(a)(2)(v)(D) because primary power was lost to accident mitigation systems.

CAUSE OF THE EVENT

The root causes (RC) of the event are:

RC1: A test instruction (TI – instructions created by extended power uprate (EPU) personnel within a work order) instead of a plant test procedure (PTP – actual plant procedure) was used for the 3rd harmonic test. The TI did not provide adequate precautions and limitations, did not identify the 480V LCs as possible limiting conditions, and did not specify the proper method of monitoring LC voltage. It contained unclear instructions to the operator to restore generator voltage in a timely manner when specific annunciators alarm.

RC2: Station personnel failed to identify the risk associated with performance of this test.

Contributing causes include: 1) There is inadequate guidance in the Operations pre-job brief checklist to address changes in the operation of the electrical generator, 2) The risk recognition of supplemental workers for the test evolution was less than adequate, 3) Control room personnel did not adequately monitor LC voltage to prevent the degraded condition and did not take timely action to restore generator voltage, 4) There is inadequate guidance in the Work Activity Risk Management procedure to ensure that an activity of this nature is assigned as high risk. The procedure does not address evolutions for the electrical generator other

than normal 100% power operations and does not describe the transition from outage to on-line risk management.

ANALYSIS OF THE EVENT

The 3rd harmonic relay power ascension test was being performed after an EPU outage. The purpose of the test is to obtain voltage data for the Unit 4 generator at various power levels during power ascension. The data is used to determine the 3rd harmonic relay settings to be implemented in the multifunctional generator protection relays [EL, RLY]. As part of the testing main generator exciter [EL, EXC] voltage was lowered to provide a MVAR range for data collection.

After subsequent review of voltages and the sequence of events report, it was identified that the voltage at the 4D LC fell below the nominal 434V ± 3 for greater than 60 seconds actuating the degraded voltage relays [ED, RLY, 27]. The relays initiated 4B sequencer bus load shedding. Shortly thereafter, 4A LC voltage fell below the nominal 430V ± 3 for greater than 60 seconds actuating the degraded voltage relays. The relays initiated 4A sequencer bus load shedding.

In response to the identified conditions the degraded voltage relays and sequencers performed their intended function. The vital buses were load shed and then repowered by the EDGs as designed.

ANALYSIS OF SAFETY SIGNIFICANCE

Plant response to the LOOP was as expected. The vital bus loads were shed, and the EDGs started and repowered the buses. Offsite power was restored to the vital buses in approximately 30 minutes, but continued to power the 4C non-essential buses the whole time. Core cooling was maintained via natural circulation until RCPs were restarted with the first RCP starting approximately 67 minutes after the LOOP. The AFW System maintained water level in the steam generators until a Standby Steam Generator Feed Pump was started approximately 55 minutes after the LOOP. The AFW System was secured and restored to standby service approximately 102 minutes after the LOOP.

Given the successful start of the EDGs and AFW, and restoration of offsite power to vital buses in approximately 30 minutes, the safety significance of this event is considered to be very low.

CORRECTIVE ACTIONS

Corrective actions are documented in AR 1867690 and include the following:

1. Eliminate the use of test instructions as an acceptable way to control plant operation.
2. Provide additional risk recognition guidance in the Work Activity Risk Management procedure to include additional checks and balances for low risk activities, address evolutions for the electrical

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generator other than at normal 100% power operation, and identify the process to transition from outage to on-line risk management.

3. Include criteria in the Operations pre-job brief checklist that would question evolutions that would change electrical generator operation.
4. Develop and implement a comprehensive program on risk recognition and management.
5. Add risk recognition to supplemental worker training and qualification consistent with the guidance in the Work Activity Risk Management procedure.
6. Include the operating limits for the switchyard, 4kV and LC voltages in the general operating procedure precautions and limitations.

FAILED COMPONENTS IDENTIFIED: None

PREVIOUS SIMILAR EVENTS: None

ADDITIONAL INFORMATION

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