

PRIORITY 2

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ACCESSION NBR: 9505150083 DOC. DATE: 95/05/05 NOTARIZED: NO DOCKET #
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light Co. 05000250
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 * Affiliation Not Assigned
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-004-00: on 950505, manual reactor trip due to failed rod control power supply. Caused by reactor trip manual action taken to complete intended shutdown to investigate faulty rod control power supplies. W/950505 ltr.

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L-95-136
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 95-004
Manual Reactor Trip Due to Failed
Rod Control Power Supplies

The attached Licensee Event Report 250/95-004 is being provided in accordance with 10 CFR 50.73(a) (2) (iv).

If there are any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Plant

CLM

attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II,
USNRC
Thomas P. Johnson, Senior Resident Inspector, Turkey Point
Plant, USNRC

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PDR ADDCK 05000250
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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME
TURKEY POINT UNIT 3

DOCKET NUMBER
05000250

LER NUMBER
95-004-00

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I. DESCRIPTION OF THE EVENT

On April 7, 1995, Florida Power & Light Company's (FPL) Turkey Point Unit 3 was being shut down to investigate recurring non-urgent failure alarms from redundant rod control power supplies [AA: rjx]. At about 2200, the unit was subcritical in Mode 2 at about $1.0E-9$ amps, the generator was off line, and rods were being driven in while borating to achieve proper shutdown boron concentration. K_{off} was still greater than 0.95, so Mode 3 had not yet been achieved. As soon as Control Bank C should have started moving in, an urgent failure alarm was received. An urgent failure prevents further rod motion via the affected Rod Control Cabinet [AA: cab] (in this case, 2AC). After determining that the urgent failure alarm was valid, the reactor was manually tripped at about 2220.

All systems responded to the reactor trip as expected, with one exception. Excore Nuclear Instrument System Intermediate Range Channel N-35 [IG] stabilized at 4×10^{-10} amps, rather than decaying to about 1×10^{-11} amps, as expected.

The NRCOC was notified of the event at about 2325, in accordance with 10 CFR 50.72 (b) (2) (ii).

II. CAUSE OF THE EVENT

The immediate cause of the reactor trip was manual action, taken to complete the intended shutdown to investigate faulty rod control power supplies.

The intermediate cause of the trip was failure of power supplies PS-3 and PS-4 in the 2AC Rod Control Power Cabinet, resulting in the urgent failure alarm and lockup of all rods powered from the 2AC cabinet. In each power cabinet, power supplies PS-3 and PS-4 are auctioneered together to provide -24 VDC to the power cabinet controls. After the shutdown, each power supply was checked with its redundant supply de-energized. Power supply PS-3 in Cabinet 2AC was found to be approximately -5 VDC. Power supply PS-4 was found to be approximately -16.6 VDC. In addition, a faulty PS-4 power supply was found in power cabinet 2BD, measuring about -4.7 VDC. Prior to the reactor trip, the supplies in Cabinet 2AC were cycling the load back and forth, and in the process were occasionally dropping below the threshold for the non-urgent failure alarms. Unloaded, the failed power supplies stayed well above the alarm setpoint.

The specific cause of the failures of these power supplies has not been determined, but FPL has had similar failures of these power supplies. The most recent failure was reported in Licensee Event Report (LER) 251-94-004. As discussed in that LER, FPL has identified replacement power supplies with higher reliability.

The cause of the faulted intermediate range channel was a bad detector [IG: det].

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) TURKEY POINT UNIT 3	DOCKET NUMBER (2) 05000250	PAGE (3) 1 OF 4
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TITLE (4) **Manual Reactor Trip Due to Failed Rod Control Power Supply**

EVENT DATE (5)			LER NUMBER (6)			RPT DATE (7)			OTHER FACILITIES INV. (8)		
MON	DAY	YR	YR	SEQ #	R#	MON	DAY	YR	FACILITY NAMES		DOCKET # (S)
04	07	95	95	004	00	05	05	95			

OPERATING MODE (9)	2	<u>10 CFR 50.73(a)(2)(i)(B)</u>
POWER LEVEL (10)	10 ⁻⁹ amps	

LICENSEE CONTACT FOR THIS LER (12)

C. L. Mowrey, Compliance Specialist	TELEPHONE NUMBER
	305-246-6204

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?
B	AA	RJX	L045	N					

SUPPLEMENTAL REPORT EXPECTED (14) NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
(if yes, complete EXPECTED SUBMISSION DATE)				

ABSTRACT (16)

Turkey Point Unit 3 was being shut down to investigate recurring non-urgent failure alarms from redundant rod control power supplies. The reactor was subcritical at about 1.0E-9 amps. When Rod Control Bank C should have started moving in, an urgent failure alarm was received. After determining that the urgent failure alarm was valid, the reactor was manually tripped at about 2220.

Power supplies PS-3 and PS-4 in the 2AC Rod Control Power Cabinet, had failed, causing the urgent failure alarm and lockup of all rods. These power supplies are auctioneered together to provide -24 VDC to the power cabinet controls.

A post-trip review established that pertinent plant parameters responded as expected. Other than the manual reactor trip, there were no reactor protection system or engineered safety feature actuations.

All four Unit 3 PS-3 power supplies were replaced with a more reliable supply. All remaining PS-3 and PS-4 power supplies will be replaced on both units. AC ripple voltage will be monitored on the remaining power supplies until they are replaced.

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III. ANALYSIS OF THE EVENT

A manual reactor trip is an expected corrective action for conditions such as are described in this event report. Plant procedures provide operator guidance in responding to the transient conditions, and assure that the plant is stabilized in a safe condition in accordance with the plant Technical Specifications. The unit was stabilized in Mode 3 in accordance with approved plant procedures.

A post-trip review was conducted to assess the proper operation of safety related equipment. This review established that plant parameters responded as expected. Other than the manual initiation of the reactor trip, there were no manual or automatic reactor protection system or engineered safety feature actuations.

Based on the above, the health and safety of the public were not adversely affected.

IV. CORRECTIVE ACTIONS

1. Plant response to the reactor trip was verified to be as predicted, using the emergency operating procedures.
2. All of the Unit 3 PS-3 power supplies were replaced with more reliable power supplies.
3. The Unit 3 PS-4 power supplies will be replaced with the more reliable power supplies during the next outage of sufficient duration.
4. All of the Unit 4 PS-3 and PS-4 power supplies will be replaced with the more reliable power supplies during the next outage of sufficient duration.
5. AC ripple voltage will be monitored on the remaining old power supplies until they are replaced, to ensure that incipient degradation is detected.
6. Root cause analysis will be performed on the three failed power supplies.
7. Operating procedures are being reviewed to ensure that the loss of ability to move rods during a unit shutdown is adequately addressed.
8. The failed detector was replaced in Intermediate Range channel N-35.

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V. ADDITIONAL INFORMATION

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

LER 251-94-004 reported a reactor trip due in part to a failed Rod Control power supply. That power supply, and the three failed power supplies reported herein, are all Lambda Model LCS-A-24-6795. The replacement power supplies are Abbott Model LV24AE0.9-ER.