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FACIL:50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-007-00:on 880812,failure of source range neutron flux detector results in subcritical reactor.

W/8 ltr.

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NRC Form 366
(9 83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Turkey Point Unit 4	0 5 0 0 0 2 5 1	1 OF 0 2

TITLE (4) Failure of Source Range Neutron Flux Detector Results in Subcritical Reactor

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 8	1 2	8 8	8 8	0 0 7	0 0	0 9	1 2	8 8	N/A	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Edward Lyons, Compliance Engineer	AREA CODE 3 0 5 — 2 4 6 - 6 7 3 1

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	J C	D E T	W 1 2 0	Y					

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On August 12, 1988, at 2347, with unit 4 in Hot Standby, Operations personnel were performing a unit shutdown to perform planned corrective maintenance when a subcritical reactor trip occurred. At the time of the trip, the control bank control rods were fully inserted and the shutdown bank "A" control rods were fully inserted. As neutron flux decreased below the P-6 interlock setpoint, the high voltage supply to both Source Range Nuclear Instrumentation channels energized as designed. Shortly afterwards, the count rate on Source Range channel N-32 drifted up and spiked above the trip setpoint. This satisfied the 1 of 2 logic for reactor trip. Both Reactor Trip Breakers opened and the shutdown bank "B" control rods dropped into the core as designed. The other Source Range channel indicated normally throughout the event. The reactor trip was caused by failure of the N-32 detector. The failed detector was replaced and the unit returned to service following completion of maintenance activities.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Turkey Point Unit 4	0 5 0 0 0 2 5 1	8 8	0 0 7	0 0	0 2 OF 0 2

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of the Event

On August 12, 1988, at 2347, a subcritical reactor trip occurred during performance of a Unit 4 shutdown to perform planned corrective maintenance. Unit 4 was in mode 3 (Hot Standby) at 547F and 2235 psig with all Control Banks inserted and Shutdown Bank "A" inserted. Operations personnel were in the process of inserting Shutdown Bank "B" control rods. As neutron flux decreased to less than the P-6 interlock setpoint of 1 E-10 amps on the Intermediate Range Nuclear Instrument Channels, the high voltage supply to both Source Range Nuclear Instrument Channels (EIIS:JC) energized as designed. Shortly afterwards, the count rate on Source Range channel N-32 drifted up and spiked above the trip setpoint of 1 E5 counts per second (cps). This satisfied the 1 of 2 Source Range High Flux trip logic. Both Reactor Trip Breakers opened as designed and the Shutdown Bank "B" control rods dropped into the core from 150 steps. At the time of the event, the unit was stable in mode 3, and remained stable following the trip.

Cause of the Event

The cause of the reactor trip was a failure of the N-32 Source Range Neutron Detector. This failure induced abnormally high noise in the detector electronics which resulted in a high count rate and spiking. The detector is a Boron Triflouride (BF3) proportional counter.

Analysis of the Event

A post trip review was performed to assess operation of equipment following the trip. No Emergency Safeguards Feature actuations occurred. At the time of the event, the unit was stable in mode 3 with the control banks inserted, and shutdown bank A inserted. When the trip signal was received, the Reactor Trip Breakers opened and shutdown bank B control rods inserted as designed.

Corrective Actions

1) A post trip review was performed which verified that plant response was as expected for this type of reactor trip.

2) Troubleshooting of the N-32 Source Range channel resulted in identification of a faulty detector. The detector was replaced with a new detector. Troubleshooting also revealed a worn pulse height discriminator bias potentiometer which was replaced as a preventative measure.

Additional Information

Component Type: BF3 Proportional Counter
Westinghouse WL-23706

Similar Occurrence: LER 250-87-022

BOX 14000, JUNO BEACH, FL 33408-0420

SEPTEMBER 1 2 1988

L-88-396
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 88-07
Date of Event: August 12, 1988
Failure of Source Range Neutron Flux Detector
Results in Subcritical Reactor Trip

The attached Licensee Event Report (LER) is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

W. F. Conway
Senior Vice President - Nuclear

WFC/TCG/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator,
Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

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