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 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
 AUTH. NAME AUTHOR AFFILIATION
 POWELL, D.R. Florida Power & Light Co.
 PLUNKETT, T.F. Florida Power & Light Co.
 RECIPIENT NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-007-00: on 910925, detector cables for ex-core nuclear instrument intermediate-range Channel N-35 found disconnected. Caused by lifted leads between N-35 drawer & detector. Maint policy issued. W/911022 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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OCT 22 1991
L-91-289
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Units 3
Docket No. 50-250
Reportable Event: 91-007-00
Date of Event: September 25, 1991
Unit 3 Entered Mode 2 With One of Two Intermediate Range Nuclear Instrumentation Channels Inoperable

The attached Licensee Event Report 250-91-007-00 is being provided in accordance with the requirements of 10 CFR 50.73(a)(2)(i) to provide notification of the subject event.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/CLM/clm

Attachment

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

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) TURKEY POINT UNIT 3

DOCKET NUMBER (2)

PAGE (3)

05000250

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TITLE (4) UNIT 3 ENTERED MODE 2 WITH ONE OF TWO INTERMEDIATE RANGE NUCLEAR INSTRUMENTATION CHANNELS INOPERABLE

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 # (5)
09	25	91	91	007	00	10	22	91			
OPERATING MODE (9)		2	<u>10 CFR 50.73(A)(2)(i)</u>								
POWER LEVEL (10)		000									

LICENSEE CONTACT FOR THIS LER (12)

David R. Powell, Superintendent of Licensing

TELEPHONE NUMBER

305-246-6559

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?

SUPPLEMENTAL REPORT EXPECTED (14) NO YES

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

(if yes, complete EXPECTED SUBMISSION DATE)

ABSTRACT (16)

At 0851 on September 25, 1991, Unit 3 logged entry into Mode 2. At 0950, the Unit 3 Reactor Control Operator declared Excore Nuclear Instrument Intermediate Range Channel N-35 inoperable, prior to going critical, when it did not respond to increasing neutron counts. The detector cables for the N-35 channel were found disconnected at the back of the drawer. The root cause of the event was personnel error by non-licensed utility personnel, in that inadequate control of the lifted leads between the N-35 drawer and the detector occurred. The cables for all other Unit 3 excore detectors were checked to ensure that no other cables were disconnected. The maintenance procedure has been revised to include lifted lead/connector documentation and independent verification. Outstanding plant work orders involving mode-deferred testing have been reviewed to ensure similar concerns for other systems do not exist. Maintenance personnel have been trained on the significance of the event. A policy letter has been issued requiring the use of Lifted Lead Control procedures for work involving lifted leads, when the leads are not specified and independently verified in a procedure. Turkey Point's lifted lead controls will be reviewed against INPO and industry practices.

LICENSE EVENT REPORT (LER) TEXT CONTINUATION

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TURKEY POINT UNIT 3 05000250 91-007-00 02 OF 04

I. EVENT DESCRIPTION

At 0851 on September 25, 1991, Unit 3 logged entry into Mode 2, and began diluting to criticality, following refueling. The shutdown banks were fully withdrawn, and control bank D was at 160 steps. Reactor Coolant System boron concentration was approximately 1212 ppm. The unit was at normal operating temperature and pressure. At 0935, dilution was stopped with the inverse count rate (1/M plot) at approximately 0.1 (reactor subcritical).

At 0950, the Unit 3 Reactor Control Operator declared Excore Nuclear Instrument Intermediate Range (IG) Channel N-35 inoperable when it did not respond to increasing neutron counts. The operating crew commenced 3-ONOP-059.7, Intermediate Range Nuclear Instrumentation Malfunction, and discovered that the signal, compensating, and power cables (IG) (CBL3) from the N-35 cabinet drawer (IG) (CAB) to the detector (IG) (DET) were disconnected at the back of the drawer. The cables were reconnected, and N-35 operability was verified using procedure 3-OSP-059.2, Intermediate Range Nuclear Instrumentation Analog Channel Operational Test. The Plant Supervisor - Nuclear then ordered that the control rods be inserted, and that an evaluation of the N-35 failure be performed prior to recommencing startup. An Event Response Team (ERT) was formed to evaluate the failure.

This event is being reported as a failure to meet Technical Specification 3.0.4, in that Unit 3 entered Mode 2 with less than the minimum number of intermediate range channels operable. Although the action statement was met by returning the channel to operable status prior to increasing thermal power above 10% of rated thermal power (Action 3 of Table 3.3-1), TS 3.0.4 does not allow entry into Mode 2 with only one intermediate range channel operable.

II. EVENT CAUSE

An analysis of N-35 maintenance history was performed. The ERT constructed an event time line, interviewed the personnel involved, and reviewed the Plant Work Orders (PWOs) and procedures that were used in the maintenance of N-35. Problems specific to this event include the following:

Procedure MP 12707.1, Excore Nuclear Instrumentation Pre-Installation and Post-Installation Inspections and Tests of Detectors, does not require the documenting or independent verification of lifting/restoring leads.

PWO 8810/63 identified the wrong entry step into MP 12707.1. The section should have been 9.3.2, Post-Installation Electrical Tests; Intermediate Range, which repeats the pre-installation tests, but includes steps to remove the channel from service, and to restore all connections after the test.

PWO 8810/63 indicates that the N-35 cables were left disconnected, and supervisory post-review of the PWO did not confirm reconnection of the cables. The PWO also indicates that MP 12707.1 was completed through step 9.3.2 on September 11, 1991. Substep 9.3.2.4 states, "On completion of tests, restore all connections and install instrument power fuses."

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Verbal communication errors occurred between the I&C day shift and peak shift on September 12, 1991.

Multiple PWOs were in progress on N-35 with no cross-reference between the PWOs.

Post-maintenance testing cannot verify channel functionality. Full circuit verification requires an increase in neutron count rate.

Review of these problems indicates that the immediate cause of the event was failure to reconnect the cables at the back of the N-35 drawer, leaving the Intermediate Range channel inoperable.

The root cause of the event was personnel error by non-licensed utility personnel, resulting in inadequate control of lifted leads.

III. EVENT SAFETY ANALYSIS

During a reactor startup, when either of the two intermediate range channels detects greater than $1 \text{ E } 10^{-10}$ amps, permissive P-6 is enabled, allowing the operator to block the source range high flux reactor trip. Since failure to do so results in a preventable reactor trip, operators are particularly attentive to the overlap between source and intermediate range indications. As a result, the operators immediately recognized the failure of N-35 to indicate an on-scale reading at the same time as N-36 (the second channel of intermediate range instrumentation); ultimately this resulted in the conservative termination of the startup, prior to criticality.

The intermediate range high flux reactor trip requires only one of the two channels to cause the trip. Since N-36 was operable, the intended reactor protection function was continuously available. Therefore the health and safety of the public was not affected.

IV. CORRECTIVE ACTIONS

1. I&C Maintenance has revised MP 12707.1 to include independent verification of lifted leads/connectors.
2. The cables for the other intermediate range channel, and for all other Unit 3 excore detectors were checked to ensure that no other cables were disconnected.
3. Outstanding PWOs have been reviewed for mode-deferred testing to verify that similar concerns do not exist.
4. A Maintenance policy letter has been issued to require that Attachment 4 of O-GMI-102.1, Troubleshooting and Repair Guidelines, be included in all I&C PWOs where lifting of leads is concerned, and the leads are not specified and independently verified in a procedure. Attachment 4 documents lifting, landing, and independent verification of leads, cables, or connectors.

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5. The above Maintenance letter also requires that Attachment 3 of O-GME-102.1, Troubleshooting and Repair Guidelines, be included in all Electrical PWOs (with the same qualifier as in the I&C PWOs). Attachment 3 documents lifting, landing, and independent verification of leads, cables, or connectors, for electrical work.
6. The Technical Department will review INPO's good practices on lifted leads, and the lifted lead programs of other power plants, and compare them to our existing lifted lead controls to evaluate the adequacy of our program. The review will be completed by October 31, 1991.
7. The Maintenance Department has trained personnel on (1) the importance and overall responsibility of a complete and thorough PWO pre- and post-review, (2) the importance of proper communication during shift turnovers, and (3) ensuring interrelated PWOs are cross referenced.

V. ADDITIONAL INFORMATION

LER 251-89-003, Rev. 01, described a reactor trip due in part to inadequate control of lifted leads. In that event the work was controlled by the Construction Group's Administrative procedures. LER 250-90-010 reported Unit 3 entering Mode 3 with insufficient instrumentation to satisfy technical specifications.