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ACCESSION NBR: 9404110261 DOC. DATE: 94/04/04 NOTARIZED: NO DOCKET #
 FACIL: 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
 AUTH. NAME AUTHOR AFFILIATION
 KNORR, J.E. Florida Power & Light Co.
 PLUNKETT Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-002-00: on 940310, personnel discovered indication of boric acid on a flux mapper guide tube. Cause leak due to TGSCC. Corrective action: plant shutdown & leaking guide tube was repaired. W/940404 ltr.

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

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APR 4 1994

L-94-078
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: 94-002-00
Plant Shutdown Required Due to Reactor Coolant System
Pressure Boundary Leakage

The attached Licensee Event Report, 251/94-002-00, is being provided in accordance with 10 CFR 50.73(a)(2)(i)(A).

If there are any questions, please contact us.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'T. F. Plunkett', is written over the typed name.

T. F. Plunkett
Vice President
Turkey Point Plant

TFP/JEK/jk

enclosure

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

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9404110261 940404
PDR ADDCK 05000251
S PDR

an FPL Group company

Handwritten initials 'LEPP' in a stylized, slanted font, with a vertical line drawn through the bottom of the letters.



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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <p style="text-align: center;">TURKEY POINT UNIT 4</p>							DOCKET NUMBER (2) <p style="text-align: center;">05000251</p>		PAGE (3) <p style="text-align: center;">1 OF 3</p>		
TITLE (4) <p style="text-align: center;">PLANT SHUTDOWN REQUIRED DUE TO REACTOR COOLANT SYSTEM PRESSURE BOUNDARY LEAKAGE</p>											
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)	
03	10	94	94	002	00	04	01	94			
OPERATING MODE (9)		1		<u>10 CFR 50.73(a)(2)(i)(A)</u>							
POWER LEVEL (10)		100									
LICENSEE CONTACT FOR THIS LER (12)											
J. E. Knorr, Licensing Specialist								TELEPHONE NUMBER			
								305-246-6757			
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?		
D	IG	TBG	W120								
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)											
<p>ABSTRACT (16)</p> <p>On March 10, 1994, with Unit 4 at 100% rated power, Florida Power and Light Company personnel discovered an indication of boric acid on a flux mapper guide tube. The location of the indication was just above the seal table. At approximately 0600 EST March 10, 1994, an Unusual Event was declared in accordance with EPIP 20101, due to a Technical Specification required shutdown. Required NRC and State notifications were completed.</p> <p>The small indication found on the guide tube was due to outside diameter chloride induced transgranular stress corrosion cracking.</p> <p>The affected section of guide tube and associated fitting adapter was removed and a new fitting adapter installed on the newly prepared guide tube end.</p> <p>The reactor coolant system was pressure tested and Unit 4 was returned to service.</p> <p>This Technical Specification required nuclear plant shutdown is being reported in accordance with 10 CFR 50.73(a)(2)(i)(A).</p>											



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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME DOCKET NUMBER LER NUMBER PAGE NO.
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I. DESCRIPTION OF THE EVENT

On March 10, 1994, with Unit 4 at 100% rated power, during an at-power in-containment inspection, performed every 6 weeks, Florida Power and Light Company personnel discovered a minute indication of boric acid on a flux mapper guide tube (thimble N-5) (EIIS IG: IEEE TRB) portion of the movable incore detector system (EIIS AB: IEEE RPV). The location of the indication was just above the seal table (EIIS IG) outside the heat affected zone of the weld attaching the fitting adapter for a flux thimble to the 3/4" guide tube. After removal of the 1/4" boric acid buildup, there was no visible leakage. After waiting an hour the physical manifestation of a possible leak location was a faint 1/8" long wetted area on the guide tube below the fitting adapter. Prior to system depressurization, the guide tube was liquid penetrant examined and the suspected indication was verified.

At approximately 0600 EST March 10, 1994, an Unusual Event was declared in accordance with EPIP 20101, due to a Technical Specification-required shutdown. NRC and State notifications were completed for the Unusual Event. The plant was taken off-line on March 10, 1994. The Unusual Event was terminated when the plant reached cold shutdown on March 11, 1994. Required NRC and State notifications were completed for the termination of the Unusual Event.

The guide tube was repaired by cutting the guide tube below the through-wall indication and welding a new adapter to the remaining tube length. Root and final weld enhanced liquid penetrant testing confirmed an ASME code acceptable weld condition. The pressure integrity of the new weld and compression fittings were verified during the reactor coolant system (RCS) overpressure testing prior to returning the plant to service on March 18, 1994.

II. CAUSE

The leak on guide tube N-5 was due to transgranular stress corrosion cracking (TGSCC) which originated at the outside diameter surface and propagated thru-wall. The guide tube consists of 304 stainless steel. Austenitic stainless steels such as those of the 200 and 300 series are subject to stress corrosion cracking from chlorides when under tensile stress. Sources of stress include residual stress due to manufacturing and cold working from machining and welding. The indication was found outside the heat affected zone of the fitting adapter to guide tube weld.

No source of impinging leakage has been identified in the area. Therefore, the most likely source of chloride contamination was from improper cleaning techniques.

III. ANALYSIS OF THE EVENT

Licensing Requirements

Technical Specification 3.4.6.2, Operational Leakage, requires the plant to be in at least hot standby (Mode 3) within 6 hours and in cold shutdown (Mode 5) within the following 30 hours when any pressure boundary leakage is found. Guide tube N-5 on the seal table is considered part of the pressure boundary. Unit 4 was in hot standby at 1132 hours EST on March 10, 1994, and reached cold shutdown at 0325 hours EST on March 11, 1994.



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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Analysis of Effects on Safety

There were no adverse consequences as a result of this condition. The leak rate was not detectable by a water balance or radiation detection systems. All leakage through the indication was evaporated at the site of the leak with no indication of dripping. The tubing at the seal table is currently visually inspected every six weeks.

The failure mechanism found does not represent a safety concern since the tube material (304 SS) is ductile and not subject to brittle crack propagation. Stress corrosion cracking failures in stainless materials will leak long before a critical crack size can be reached. Since these tubes are scheduled to be visually inspected every six weeks, any indication would be detected shortly after a leak begins.

Nevertheless, had the guide tube suffered catastrophic failure, the size of the break would have been limited to the capacity of the three-quarter inch outside diameter guide tube. This size of break is bounded by the small break Loss Of Coolant Accident analyzed in the Updated Final Safety Analysis Report, Section 14.3.2.2, in which the limiting small break size is given as a two inch diameter cold leg break (3.142 square inch area).

Therefore, no compromise to the safety of plant personnel or the general public occurred due to this found condition.

IV. CORRECTIVE ACTIONS

Immediate:

The plant was shutdown and the leaking guide tube repaired. The repair was pressure tested and leak inspected prior to return to service.

Long Term:

Cleanliness measures for post-maintenance use in the area of the seal table will be reviewed for potential enhancement to provide for thorough cleaning without chloride exposure.

V. ADDITIONAL INFORMATION

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

The guide tube was supplied by Westinghouse Electric Corp. as material SA 213, Type 304 (304L is acceptable with a tensile strength of 75 ksi min. and yield strength of 30 ksi min.)

LER 250/93-002 was issued to document a plant shutdown due to pressure boundary leakage at Turkey Point Plant Unit 3.



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