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ACCESSION NBR: 9212290173 DOC. DATE: 92/12/17 NOTARIZED: NO DOCKET #
 FACIL: 50-256 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
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 MOWREY, C.L. Florida Power & Light Co.
 PLUNKETT, T.F. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-014-00: on 921125, small steam leak discovered on abandoned bellows rupture telltale line on pressurizer spray valve. Caused by inappropriate application of matl from which cap fabricated. Pipe cap replaced. W/921217 ltr.

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L-92-345
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: 92-014-00
Reactor Coolant System Pressure Boundary Leakage

The attached Licensee Event Report 250/92-014-00 is being provided in accordance with 10 CFR 50.73 (a) (2) (i) (B).

If there are any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/CLM/jk

enclosure

cc: Stewart D. Ebnetter, Regional Administrator, Region II,
USNRC
Ross C. Butcher, 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) 05000250		PAGE (3) 1 OF 3	
TITLE (4) REACTOR COOLANT SYSTEM PRESSURE BOUNDARY LEAKAGE; PIPE CAP ON PRESSURIZER SPRAY VALVE													
EVENT DATE (5)			LER NUMBER(6)			RPT DATE (7)			OTHER FACILITIES INVOLVED (8)				
MON	DAY	YR	YR	SEQ #	R#	MON	DAY	YR	FACILITY NAMES			DOCKET # (S)	
11	25	92	92	014	00	12	17	92					
OPERATING MODE (9)		3		<u>10 CFR 50.73(a)(2)(i)(B)</u>									
POWER LEVEL (10)		000											
LICENSEE CONTACT FOR THIS LER (12)													
C. L. Mowrey, Licensing OEF Engineer/Analyst										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	AB	PSF	X999		Y								
SUPPLEMENTAL REPORT EXPECTED (14) NO <input type="checkbox"/> YES <input type="checkbox"/>								EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	
(if yes, complete EXPECTED SUBMISSION DATE)													
ABSTRACT (16)													
<p>During inspections for the Reactor Coolant System (RCS) overpressure test following a refueling outage, a small leak was discovered. The leak was through a pipe cap on an abandoned bellows rupture telltale line on pressurizer spray valve PCV-3-455B. After an unsuccessful attempt to isolate the leak, an Unusual Event was declared for RCS pressure boundary leakage. The Unusual Event was terminated when the unit entered Mode 5.</p> <p>The pipe cap was found to have been machined from rolled bar stock, unlike most pipe caps in similar applications which are forged fittings. The leak occurred as a result of gradually weakened ligaments surrounding laminations in the original rolled bar stock. It appears that the pipe cap has been in place since original installation of the pressurizer spray valve.</p> <p>As corrective action, the pipe caps on PCV-3-455A and PCV-3-455B were replaced with ANSI Class B16.11 forged fittings. Similar pipe caps on Unit 4 will be inspected for replacement during the next outage of sufficient duration. No other non-isolable pipe caps were found to be fabricated of similar material.</p>													

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TURKEY POINT UNIT 3	05000250	92-014-00	02 OF 03

I. DESCRIPTION OF THE EVENT

On November 25, 1992, Turkey Point Unit 3 was in Mode 3 following a refueling outage. At about 1330, during the performance of the Reactor Coolant System (RCS) [EIIS:AB] overpressure test, a small steam leak was discovered on an abandoned bellows rupture telltale line on the pressurizer spray valve which taps off the 3B RCS loop (PCV-3-455B) [EIIS:PCV]. The leak emanated from a pipe cap [EIIS:PSF] welded onto the end of the telltale line. An attempt was made to isolate the leak by backseating the spray valve and closing a manual upstream valve. The attempt was unsuccessful.

At about 1825, when it was apparent that the attempt to isolate the leak was unsuccessful, an Unusual Event was declared for pressure boundary leakage. Technical Specification 3.4.6.2a requires that for any pressure boundary leakage, the plant must be in HOT STANDBY (Mode 3) within 6 hours and in COLD SHUTDOWN (Mode 5) within the following 30 hours. Since the leak could not be isolated, it was conservatively declared to be pressure boundary leakage, resulting in the Notification of an Unusual Event (NOUE). The NRCOC was notified of the NOUE at 1838. The unit entered Mode 5 at 0812 on November 26, 1992 and terminated the Unusual Event.

The original spray valve configuration used a bellows design. Although the telltale line was designed to indicate a bellows failure, this line was capped at Turkey Point Unit 3 during original installation. With the bellows installed, no pressure would be applied to the cap so long as the bellows remained intact. Due to a high failure rate, the bellows were eliminated and live load packing installed. Elimination of the bellows rendered the original intended function of the line obsolete, and made the line and the pipe cap RCS pressure-containing components.

II. CAUSE OF THE EVENT

The immediate cause of the Unusual Event was a leak through the end of a welded pipe cap. Since the leak could not be isolated, it was considered pressure boundary leakage.

The root cause of the leak appears to be an inappropriate application of the material from which the cap was fabricated. After the pipe cap was removed, it was destructively examined to determine the nature of the leak point. Unlike most of the caps in use at Turkey Point Units 3 and 4, which are forged fittings, this cap was found to have been machined from bar stock. The root cause of failure was determined to be the presence of excessive laminations in the austenitic stainless steel material. These were original material defects introduced during the manufacture of the rolled bar stock. The eventual leakage resulted from a gradual weakening of ligaments surrounding the laminations in the defective material while in high pressure (2235 psig) service.

Other than the large concentration of laminations, the material displayed a normal microstructure for an austenitic stainless steel material. There was no evidence of fatigue, stress corrosion cracking, or other active corrosion mechanism.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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III. ANALYSIS OF THE EVENT

The leak was discovered during a post-refueling pre-startup inspection for just such leaks, and was identified by very small wisps of steam coming from the cap. Such a small leak had no measurable effect on the RCS leak rate, and therefore was well within the capability of the installed plant systems.

This type of material defect will not result in catastrophic failure, but in small leakage which may gradually increase if unattended. Nevertheless, had the pipe cap suffered catastrophic failure, the size of the break would have been limited to the one-half inch diameter of the telltale line. Schedule 80 piping of size one-half inch nominal pipe size translates into a break area of 0.234 square inches. 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).

IV. CORRECTIVE ACTIONS

1. The failed pipe cap, as well as the one installed on valve PCV-3-455A, was removed and replaced with appropriate ANSI Class B16.11 pipe caps forged from ASTM A312 Type 316 material.
2. The pipe caps on valves PCV-4-455A and PCV-4-455B will be inspected and/or replaced during the next outage of sufficient duration (next refueling outage, at the latest).
3. A review was performed to identify other non-isolable RCS pipe caps fabricated from a similar material. No other pipe caps were found to be fabricated of a similar material.
4. A Drawing Change Request has been generated to add the pipe caps to the Bill of Materials on the vendor drawing.

V. ADDITIONAL INFORMATION

None.