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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
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SUBJECT: LER 94-004-00:on 941103,Unit 3 outside design basis due to two of three required safety injection pumps inoperable. Control switches for 3A & 3B safety injection pumps immediately returned to automatic.W/941110 ltr.

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L-94-286
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: 94-004-00
Unit 3 Outside the Design Basis Due to Two of Three Required Safety Injection Pumps Inoperable

The attached Licensee Event Report, 250/94-004-00, is being provided in accordance with 10 CFR 50.73(a)(2)(i) and 10 CFR 50.73(a)(2)(ii).

If there are any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Plant

jek

enclosure

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

JE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
TURKEY POINT UNIT 3	05000250	1 OF 5

TITLE (4)
UNIT 3 OUTSIDE THE DESIGN BASIS DUE TO TWO OF THREE REQUIRED SAFETY INJECTION PUMPS 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 # (S)
11	3	94	94	004	00	11	10	94		

OPERATING MODE (9)	1	10 CFR 50.73(a)(2)(i) 10 CFR 50.73(a)(2)(ii)
POWER LEVEL (10)	100%	

LICENSEE CONTACT FOR THIS LER (12)

	TELEPHONE NUMBER
J. E. Knorr, Regulation and Compliance Specialist	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?
A									

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

ABSTRACT (16)

At 0906 EST on November 3, 1994, during performance of the Unit 4 "A" train safeguards testing required by Technical Specifications, the two Unit 3 high head safety injection pumps' control switches were incorrectly placed in a pull-to-lock position. This configuration resulted in both Unit 3 high head safety injection pumps being inoperable. The Unit 4A safety injection pump was functional but technically inoperable due to the requirements of the safeguards procedure. Additionally, the 4B pump was operable throughout this event. Recovery from this condition of the plant, assuming an accident, is covered under Turkey Point Emergency Operating Procedures. Since the current licensing basis assumes two high head safety injection pumps, the functionality or operability of the 4A and 4B pumps provide the systems required.

The cause of this event was human error by a licensed operator while performing the safeguards test procedure on Unit 4. The condition was discovered by Operations management in its oversight role.

Corrective actions have been put in place to enhance communications and revise procedures to ensure correct system alignment.

I. DESCRIPTION OF THE EVENT

At 0906 EST on November 3, 1994, with Unit 4 in Mode 5, during performance of the Unit 4 "A" train safeguards test, and with Unit 3 at 100% power, the two Unit 3 high head safety injection pumps' [BQ:P] control switches [BQ:JS] were incorrectly placed in a pull-to-lock position. This configuration resulted in both Unit 3 high head safety injection pumps being inoperable. The Unit 4A safety injection pump was functional yet technically inoperable due to the 4A sequencer [JE:34] testing requirements of procedure 4-OSP-203.1, "Train A Engineered Safeguards Integrated Test." The 4B safety injection pump remained operable throughout the event. Technical Specification 3.5.2 requires three high head safety injection pumps to be operable when the opposite unit is in Mode 4, 5, or 6. Therefore Unit 3 was not in compliance with Technical Specification 3.5.2 for approximately 2 hours and 45 minutes. Also, Unit 3 was in Technical Specification 3.0.3 since no ACTION statement covered the condition found. No shutdown was initiated since the plant was returned to compliance with the Technical Specifications as soon as the condition was discovered.

Step 7.4.26 of 4-OSP-203.1 requires the 3A and 3B safety injection pumps' control switches to be placed in the STOP position after completion of the "Loss of Offsite Power Coincident with Safety Injection" test. This operation normally returns the pumps to automatic such that they would respond to an actual safety injection signal. On November 3, however, the pump control switches were incorrectly placed in the pull-to-lock position thereby rendering the pumps inoperable.

The 3A and 3B pump control switches were discovered in the pull-to-lock position at approximately 1145 EST on November 3, and were immediately returned to the automatic start position. Unit 3 was returned to its design basis configuration at that time.

The condition was reported to the NRCOC at 1324 on November 3, 1994.

II. CAUSE OF THE EVENT

The cause of the event was a cognitive error by licensed personnel. The test director (a licensed operator) while restoring systems to normal, incorrectly directed another licensed operator to place the 3A and 3B safety injection pump control switches in the pull-to-lock position. The error was discovered by Operations management (in its oversight role) after approximately 2 hours and 45 minutes at which time the control switches were returned to the correct position. Procedure 4-OSP-203.1 requires the control switch to be placed in the STOP position. The switch position labels have the STOP position labeled "pull to stop," which may have contributed to the error.

The pre-job briefing of the Unit 3 operators for the Unit 4 safeguards test did not include adequate information about the expected Unit 3 system response (e. g., annunciation to be received) during the Unit 4 safeguards test.

III. ANALYSIS OF THE EVENT

System Description:

Turkey Point Units 3 and 4 have four shared high head safety injection pumps (3A, 3B, 4A and 4B) which normally take suction on two refueling water storage tanks, with both units operating.

At the time of this event, all four safety injection pump suctions were aligned to the Unit 3 refueling water storage tank. When a safety injection signal is generated all four pumps receive a start signal. When only one unit is operating in Mode 1, 2, or 3, only three safety injection pumps are required to be operable. Therefore, in this event 3 safety injection pumps were required to be operable. Technical Specification 3.5.2, ACTION statement a, allows an operating unit with the opposite unit in Mode 4, 5, or 6 to have only two safety injection pumps operable for up to 72 hours. In this case, only one pump, the 4B, was operable for 2 hours and 45 minutes. The Unit 4A safety injection pump was also functional yet technically inoperable, due to test equipment attachments, and would have started upon demand.

The Unit 3 and 4 common control room has controls for all four safety injection pumps on both the Unit 3 and Unit 4 vertical panels. The switch positions are visible from the opposite unit switch positions. In this event, the control switches for the 3A and 3B pump on the Unit 4 vertical panel were placed in the pull-to-lock position; the control switches on Unit 3 vertical panel for the 3A and 3B pump would not run the pumps. Indication of the 3A and 3B switch positions in STOP or pull-to-lock is available at the Unit 4 switch location and the Unit 3 and Unit 4 annunciator panels (H3/1 and H3/2) above the vertical panel switch locations.

Analysis:

In the event of an accident, with the need for safety injection, Emergency Operating Procedure 3/4-EOP-E-0, "Reactor Trip or Safety Injection," immediate action step 4 requires the manual actuation of safety injection if automatic actuation has not occurred. Even if this step is misdiagnosed, two other success paths to initiate safety injection are subsequently available. The foldout pages for 3/4-EOP-E-0 and other transition procedures, for example 3/4-EOP-ES-0.1, "Reactor Trip Response," direct the actuation of safety injection based upon specific actuation criteria. Foldout pages are required to be monitored on a continuous basis throughout the use of the procedures. Therefore, the use of the EOP set will require the initiation of safety injection even if the control switches are put in the pull-to-lock position.

On November 4, 1994, two scenarios were run on the Unit 3 simulator at Turkey Point. In the first scenario the 3A and 3B pump were in pull-to-lock on the Unit 4 control board and the 4A pump was out of service. The 4B safety injection pump was the single failure assumed. The first scenario also assumed that the crew correctly diagnosed the need for safety injection and the use of 3/4-EOP-E-0 to direct the manual initiation of safety injection. The simulator crew diagnosed the condition and the Response-Not-Obtained section of step number 4 resulted in the manual initiation of safety injection. Step 8 of 3/4-EOP-E-0 also verifies that safety injection pumps are running and would lead to the starting of the pumps if they had been missed in step 4. The second scenario was the same as the first from a system standpoint, however, the crew was directed to intentionally misdiagnose the need for safety injection and transfer to another procedure

as directed by 3/4-EOP-E-0 to determine if the conditions were present to still have safety injection manually initiated. This scenario also led to a success path because the foldout page requires the continual monitoring of safety injection actuation criteria. On November 5, 1994, simulator runs were conducted to determine the success path using different crews. In all cases safety injection was started as directed by 3/4-EOP-E-0.

These simulator exercises described above gave assurance that the use of Emergency Operating Procedures (EOPs) would successfully start the required safety injection pumps even assuming a single active failure.

In 1991, Florida Power and Light Company (FPL) directed Westinghouse (NSSS and Fuel Supplier) to re-analyze the Turkey Point large break loss of coolant accident (LOCA), small break LOCA and non-LOCA analyses. These analyses are complete. The Westinghouse best-estimate LOCA methodology is currently under review by the NRC. These analyses justify the need for only one safety injection pump for a response to a LOCA. This best estimate LOCA analysis focuses on the use of a refined methodology to quantify the statistical combination of uncertainties. By using plant specific parameters such as system configuration, flows, operating conditions, delay times, percent of steam generator tubes plugged, etc., the best estimate LOCA computer code can more accurately calculate the expected performance of the unit as a function of the event. Upon completion of the NRC review of the Turkey Point specific analyses, expected to be submitted in late 1995, the Final Safety Analysis Report design basis will be revised to reflect the results of the new analyses. These new analyses support the conclusion that only a single high head safety injection pump is required to mitigate an accident.

If, as in this event, the 4B pump is operable, the one safety injection pump required by the best estimate LOCA will start, and the EOPs will direct the start of more if necessary. Also note that the Unit 4A safety injection pump was also functional yet technically inoperable and would have started upon demand. Therefore, the health and safety of the public and plant personnel were not compromised.

For 20 minutes (11:25 to 11:45 on November 3, 1994) the operability of the 4B high head safety injection pump could have been affected by the design deficiency of the 4B sequencer discussed in LER 250-94-005.

This event is reportable in accordance with 10 CFR 50.73 (a)(2)(i)(B) and 10 CFR 50.73 (A)(2)(ii)(A) and (B).

IV. CORRECTIVE ACTIONS

The following corrective actions address the causes identified above and the Human Performance Evaluation System review conducted on this event.

1. Upon discovery of the misposition, the control switches for 3A and 3B safety injection pumps were immediately returned to automatic.

2. The event was discussed with each crew when taking watch, with a focus on the need for self checking. Operations department guidance will be developed to provide for procedures of this task type to be in the hands of the personnel performing the procedure steps.

3. Steps were added to each section of the safeguards procedure, 4-OSP-203.1 and 4-OSP-203.2, to independently verify the equipment lineup.

4. The procedure steps for the stop of each safety injection pump are clarified to return to automatic.

5. The procedure will be revised to require each crew to be briefed on the effect of the test on common equipment prior to the beginning of each section of the safeguards procedure.

6. Caution tags will be installed on all common equipment during the safeguards test to further identify the operability of the opposite unit equipment.

7. An independent test oversight supervisor was assigned for the safeguards testing sequence.

V. ADDITIONAL INFORMATION

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

During the past two years LER 250/93-003 dated January 23, 1993, was similar in nature with two trains of containment spray out of service at the same time due to personnel error.