

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9705160224    DOC. DATE: 97/05/09    NOTARIZED: NO    DOCKET #  
 FACILITY: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light Co    05000250  
 AUTH. NAME    AUTHOR AFFILIATION  
 KNORR, J.E.    Florida Power & Light Co.  
 HOVEY, R.J.    Florida Power & Light Co.  
 RECIP. NAME    RECIPIENT AFFILIATION

SUBJECT: LER 97-004-00: on 970411, auxiliary feedwater automatic start  
 upon trip of all main feedwater pumps, occurred. Caused by  
 mispositioned valve closing. Valves listed as inappropriately  
 positioned were repositioned. W/970509 ltr.

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L-97-125  
10 CFR §50.73

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

Re: Turkey Point Unit 3  
Docket No. 50-250  
Reportable Event: 97-004-00  
Auxiliary Feedwater Automatic Start  
Upon the Trip of all Main Feedwater Pumps

The attached Licensee Event Report, 250/97-004-00, is being provided in accordance with 10 CFR 50.73(a)(2)(iv).

If there are any questions, please contact us.

Very truly yours,

R. J. Hovey  
Vice President  
Turkey Point Plant

JEK

attachment

cc: Luis A. Reyes, Regional Administrator, Region II,  
USNRC  
Thomas P. Johnson, Senior Resident Inspector, USNRC,  
Turkey Point Plant

9705160224 970509  
PDR ADOCK 05000250  
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# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <div style="text-align: center;">TURKEY POINT UNIT 3</div>	DOCKET NUMBER (2) <div style="text-align: center;">05000250</div>	PAGE (3) 1 OF 5
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TITLE Auxiliary Feedwater Automatic Start Upon the Trip of all Main Feedwater Pumps

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)
4	11	97	97	004	00	5	09	97			

OPERATING MODE (9)	3	10 CFR 50.73(a)(2)(iv)
POWER LEVEL (10)	N/A	

LICENSEE CONTACT FOR THIS LER (12)	
J. E. Knorr, Regulation and Compliance 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?

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)				

ABSTRACT (16)

On April 11, 1997, Florida Power & Light Company's Turkey Point Unit 3 was in Mode 3 proceeding toward a startup following a refueling outage.

At 0503, while starting the 3B main feedwater pump ( the 3A pump was off) the supply breaker failed to close. When the control switch was returned to the mid position, with no other main feedwater pump running, the logic for automatic auxiliary feedwater start was satisfied. All auxiliary feedwater pumps started as expected. The auxiliary feedwater pumps were shutdown and returned to normal standby status at 0550.

The cause of the start failure of 3B main feedwater pump was found to be a mispositioned valve closing the sensing line for a start permissive lube oil pressure switch, resulting in a supply breaker not closing. Therefore the 3B main feedwater pump did not start which caused an auxiliary feedwater start. The cause of the mispositioned valve is indeterminate.

The NRC operations center was notified at 0832 in accordance with 10 CFR §50.72(b)(2)(ii), Engineered Safety Feature Actuation.



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## I. DESCRIPTION OF THE EVENT

On April 11, 1997, Florida Power & Light Company's Turkey Point Unit 3 was in Mode 3 proceeding toward a startup following a refueling outage and replacement of the 3B main feedwater pump casing.

At 0503, while starting the first (3B) main feedwater pump [SJ:P] the supply breaker [SJ:BKR] failed to close. When the control switch [SJ:JS] was returned to the mid position, with no other main feedwater pump running, the logic for automatic auxiliary feedwater start was satisfied. All auxiliary feedwater pumps [BA:P] started as expected. The auxiliary feedwater pumps were shutdown and returned to normal standby status at 0550. No other engineered safeguards equipment started or was expected to start.

The NRC operations center was notified at 0832 in accordance with 10 CFR §50.72(b)(2)(ii), Engineered Safety Feature Actuation.

## II. SYSTEM DESCRIPTION

Turkey Point Unit 3 has two main steam generator feedwater pumps which take water from the fifth stage of feedwater heaters and pump that water through the sixth stage of feedwater heaters into the steam generators. The capacity of each of these pumps is enough to supply needed feed to the steam generators at 60% reactor power. A successful startup of a main steam generator feedwater pump (closure of the electrical supply breaker) requires a number of system parameters to be met. 1) Either the control switch in the control room or the local push button must be moved to the start position. 2) The suction pressure to the pump must be greater than 240 psig. 3) The lube oil pressure must be greater than 7 psig. If all three of these conditions are not met the pump supply breaker will not close and start the main steam generator feedwater pump.

The auxiliary feedwater system is designed to supply feed to the steam generators upon loss of normal feedwater. One of the five auxiliary feedwater actuation signals is the trip of both main steam generator feedwater pumps. Therefore, if an attempt is made to start the first steam generator feedwater pump and the pump does not start, releasing the control switch which will spring return to mid position, will actuate auxiliary feedwater. This is what happened in this event.

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## III. CAUSE OF THE EVENT

Investigation of the condition of the 3B main steam generator feedwater pump resulted in the identification of the isolation of the pressure switch (PS-3-2051) [SJ:63] for the lube oil pressure on the 3B feedwater pump. The isolation valve (3-40-097B) [SJ:ISV] for PS-3-2051 was found in the closed position. With this condition present, when the feedwater pump motor control switch was placed in the start position, the pump did not start since the breaker did not close. The breaker did not close because the pressure switch saw no lube oil pressure which prevented the breaker closure. The pressure switch must sense a lube oil pressure greater than 7 psig to enable the closure of the supply breaker.

Investigation of the reasons for the closure of valve 3-40-097B found that the valve had been replaced during the refueling outage (March 23, 1997) and work order documentation indicated the valve was left in the open position. Two additional verifications of valve position were performed on March 31, 1997.

Two other valves on the sensing lines for the suction side of the main steam generator feedwater pump were also found to be mispositioned.

1) Valve 3-20-771 [SJ:ISV], isolation valve for PS-3-2031, suction pressure start permissive [SJ:63] was found in the 1/4 turn open position. Full open for this valve requires 3 and 1/2 turns. Full closure of this valve would have prevented the start of the 3B main steam generator feedwater pump.

2) Valve 3-20-765 [SJ:ISV], high side isolation valve for the main steam generator feedwater pump suction strainer differential pressure [SJ:PDS] was found closed instead of open. The as found condition of this valve would not have prevented the closure of the supply breaker to the 3B main steam generator feedwater pump.

Each of these valves had been recently verified to be in their required position.

The cause for the mispositioned valves is indeterminate.

## IV. ANALYSIS OF THE EVENT

The loss of normal feedwater flow is an analyzed event in the Updated Final Safety Analysis Report (UFSAR) (Section 14.1.11.1).





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Following is a discussion of that analysis. A loss of normal feedwater results in a reduction in capability of the secondary system to remove heat generated in the reactor core. In the case of this event the reactor was in Mode 3 and had not started up since the shutdown for refueling on March 3, 1997. Therefore the heat in the core was limited to the remaining decay heat of the core and the heat generated by the running reactor coolant pumps. If an alternate supply of feedwater were not supplied to the plant, core residual heat could cause a primary system heatup. The residual heat in this event was minimal compared to the analyzed event.

Three turbine driven auxiliary feedwater pumps start on the trip of all main feedwater pumps to supply feedwater to the steam generators for continued heat removal from the reactor coolant system.

The assumptions in the UFSAR accident analysis include initially operating at 102 % reactor power with reactor coolant at 6 degrees Fahrenheit higher than nominal, and a reactor trip occurring on low-low steam generator water level. All of these assumptions would result in more residual heat than that present in the event which is the subject of this Licensee Event Report.

Analysis is presented in the UFSAR to show that following a loss of normal feedwater, the auxiliary feedwater system is capable of removing the stored and residual heat, thus preventing either over pressurization of the reactor coolant system, over pressurization of the secondary side, or uncover of the reactor core. Consequently, for the analyzed accident, the plant is able to return to a safe condition. In this event no unsafe condition existed.

Since the plant was tripped in Mode 3, and the steam generator heat transfer capability was not reduced, the primary system variables never approached a departure from nucleate boiling condition.

Based on the above, the health and safety of the public were not adversely affected.

## V. CORRECTIVE ACTIONS

- 1) The valves listed as inappropriately positioned were repositioned.



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- 2) Starting alternatives to avoid auxiliary feedwater initiation upon failure of an initial main steam generator feedwater pump start will be evaluated.
- 3) Procedure 0-SMI-059.2, "Outside Containment Instrument Independent Verification Inspection," will be revised to include more explicit direction on how to ensure listed instruments are in service. This corrective action applies to both Units 3 and 4.
- 4) Individuals responsible for verification of proper alignment of valves prior to pump operation were counseled.

## VI. ADDITIONAL INFORMATION

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

