

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8811180167 DOC.DATE: 88/11/14 NOTARIZED: NO DOCKET #  
 FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250.  
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 GROSS,K.W. Florida Power & Light Co.  
 CONWAY,W.F. Florida Power & Light Co.  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-025-00:on 881013,potential EDG sequencer,intake CWP  
 interaction could have prevented fulfillment of SF.  
 W/8 ltr.

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10/21/88

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Turkey Point Unit 3</b>										DOCKET NUMBER (2) <b>0 5 0 0 0 2 5 0</b>										PAGE (3) <b>1 OF 0 3</b>																													
TITLE (4) <b>Potential Emergency Diesel Generator Sequencer - Intake Cooling Water Pump Interaction Could Have Prevented the Fulfillment of a Safety Function</b>																																																	
EVENT DATE (5) MONTH: <b>10</b> DAY: <b>13</b> YEAR: <b>88</b>										LER NUMBER (6) YEAR: <b>88</b> SEQUENTIAL NUMBER: <b>025</b> REVISION NUMBER: <b>00</b>										REPORT DATE (7) MONTH:    DAY:    YEAR:										OTHER FACILITIES INVOLVED (8) <b>Turkey Point Unit 4</b>																			
OPERATING MODE (9) <b>5</b>										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																							
POWER LEVEL (10) <b>0 0 0</b>										20.402(b)										20.406(c)										50.73(a)(2)(iv)										73.71(b)									
										20.406(a)(1)(i)										50.36(c)(1)										<input checked="" type="checkbox"/> 50.73(a)(2)(v)										73.71(c)									
										20.406(a)(1)(ii)										50.36(c)(2)										50.73(a)(2)(vi)										OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
										20.406(a)(1)(iii)										50.73(a)(2)(i)										50.73(a)(2)(vii)(A)																			
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LICENSEE CONTACT FOR THIS LER (12)																																																	
NAME <b>Karl W. Gross, Compliance Engineer</b>																				TELEPHONE NUMBER AREA CODE: <b>3 0 5</b> NUMBER: <b>2 4 6 - 6 7 4 9</b>																													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																	
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On October 13, 1988, it was determined that a potential interaction between the Emergency Diesel Generator (EDG) sequencer and the Intake Cooling Water (ICW) pump control system could have prevented the fulfillment of a safety function if a design basis accident (DBA), loss of offsite power (LOOP) and a single failure resulting in the A train ICW pump tripping due to overcurrent occurred together. Specifically, the logic of the ICW pumps is designed such that if the A pump tripped automatically due to overcurrent, and the B pump was already operating, the C ICW pump would start. This could cause the overload of the B EDG which if it too tripped would remove the ability to remove design basis heat loads via the ICW system. As noted, this condition could only exist for the specific combination of a DBA, LOOP and a single failure resulting in an overcurrent trip of the A ICW pump. The root cause of this event was inadequate design of the ICW pump control circuitry which did not address the potential for interaction with the EDG load scheme. As specific corrective action, plant changes are being implemented which remove the automatic standby start logic for the C ICW pumps. Other three pump systems have been reviewed and no similar interactions were identified. Additional actions will address the condition through redesign of the entire onsite emergency power generation system.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	05000250	88	025	00	02	OF	03

TEXT (If more space is required, use additional NRC Form 366A's) (17)

**Event Description**

On October 13, 1988, at approximately 1040, it was determined that a potential interaction existed between the Emergency Diesel Generator (EDG, EIIS Code EK) sequencer and the Intake Cooling Water (ICW, EIIS Code BI) pump control system which could have prevented the fulfillment of a safety function if a design basis accident (DBA), loss of offsite power (LOOP) and a single failure resulting in the A train ICW pump tripping due to overcurrent occurred together. Unit 3 was in mode 5, cold shutdown and Unit 4 in mode 6, refueling when the condition was identified.

The condition was identified by a contract engineering service company during analysis of the ICW pump automatic start logic in support of the Turkey Point EDG Enhancement Project. This project will include the installation of additional EDGs at the site, and requires a detailed reanalysis of the loading of the EDGs following a design basis accident. The analysis indicated that if a DBA and LOOP occur, and the EDGs start, a potential for the loss of the ability of the ICW system to perform its safety function exists. Specifically, the control logic of the ICW pumps is designed such that if the A pump tripped automatically due to overcurrent, and the B pump was already operating, the C ICW pump would start. The starting of the C ICW pump could cause the overload of the B EDG which would be supplying power to its bus. This overload threatens the ability of the B EDG to operate, and if it too tripped, the plant would not have the ability to remove design basis heat loads via the ICW system (A pump trip on overcurrent, B and C pump without power).

As noted, this condition could only exist for the specific combination of a DBA, LOOP and a single failure resulting in an overcurrent trip of the A ICW pump.

**Cause of Event**

The root cause of this event was inadequate design of the ICW pump control circuit.

**Analysis of Event**

The analysis indicated that if a DBA and LOOP occur, and the EDGs start, a potential for the loss of the ability of the ICW system to perform its safety function exists. Specifically, the control logic of the ICW pumps is designed such that if the A pump tripped automatically due to overcurrent, and the B pump was already operating, the C ICW pump would start. The starting of the C ICW pump could cause the overload of the B EDG which would be supplying power to its bus. This overload threatens the ability of the B EDG to operate, and if it too tripped, the plant would not have the ability to remove design basis heat loads via the ICW system (A pump trip on overcurrent, B and C pump without power). This would not affect the ability of the plant to remove heat via the steam generators.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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Turkey Point Unit 3	0 5 0 0 0 2 5 0	8 8	0 2 5	0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

The EDGs are designed to power the equipment required to safely shutdown the unit in the event a LOOP and DBA occur. The ICW system is designed to remove the design basis heat loads which occur following an accident and as the units are shutdown. The loss of the ICW system could have prevented the system from performing its safety function, i.e. removal of the design basis heat loads following an assumed DBA. Because of the complex chain of concurrent failures required to cause this condition, this condition was not likely to occur, however it should have been addressed in the design. This combination of events has not occurred at Turkey Point. Based on the above, the health and safety of the public was not affected.

**Corrective Actions**

- 1) Following identification of this condition, the 3 C and 4 C ICW pump breakers were racked out pending analysis of the impact of the design on the ability of the plant to respond while in a shutdown and/or refueling condition.
- 2) A review of other 3 pump systems was conducted and no similar interactions were identified which could have caused similar effects.
- 3) To correct the condition, plant change packages were generated to remove the automatic standby start logic for the C ICW pump, when the A ICW pump trips on overcurrent. These changes are being implemented prior to Mode 4 entry following the current outages.
- 4) Additional corrective actions will be implemented as a part of the EDG Enhancement Project. These changes will address the condition through redesign of the entire onsite emergency power generation system. This project is currently scheduled for implementation by the end of 1991 in accordance with the Turkey Point Integrated Schedule.
- 5) The EDG Load Evaluation examined control circuits for equipment which is automatically loaded by the sequencer and loads which are automatically loaded based on process control parameters. Due to the unique design of the initiating signal (i.e. overcurrent trip of the pump) which starts the standby pump independent of sequencer action, this condition was not recognized during the EDG load evaluation. Components with potentially similar control circuit designs will be reviewed to verify the adequacy of the previous load evaluation. This will be completed prior to either unit entering Mode 4 following the current outage.

**Additional Information**

LER 250-85-042 reported a previous event concerning EDG loading.

**FPL**

NOVEMBER 14 1988

L-88-487  
10 CFR 50.73


U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
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Gentlemen:

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Reportable Event: 250-88-25  
Date of Event: October 13, 1988  
Potential Emergency Diesel Generator Sequencer -  
Intake Cooling Water Pump Interaction Could Have  
Prevented the Fulfillment of a Safety Function

The attached License Event Report (LER) is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the event.

Very truly yours,

  
W. F. Conway  
Senior Vice President - Nuclear

WFC/RHF/gp

Attachment

cc: Malcolm L. Ernst, Acting Regional Administrator, Region II,  
USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant

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