

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8706230415      DOC. DATE: 87/06/18      NOTARIZED: NO      DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light Co      05000250  
 AUTH. NAME      AUTHOR AFFILIATION  
 HART, R. D.      Florida Power & Light Co.  
 WOODY, C. O.      Florida Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 87-014-00: on 870519, while unit in Mode 6, determined that design discrepancy existed in containment spray sys. Caused by flow orifice in discharge line not incorporated in field. Design mods. will be implemented for correction. W/870618 ltr.

DISTRIBUTION CODE: IE22D      COPIES RECEIVED: LTR 1 ENCL 1      SIZE: 5  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

## NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-2 LA	1 1	PD2-2 PD	1 1
	McDONALD, D	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/GAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/RMAS/ILRB	1 1
	NRR/PMAS/PTSB	1 1	REG FILE 02	1 1
	RES DEPY GI	1 1	RGN2 FILE 01	1 1
EXTERNAL:	EG&G GROH, M	5 5	H' ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1



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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Turkey Point 3</b>										DOCKET NUMBER (2) <b>0 5 0 0 0 2 5 0</b>										PAGE (3) <b>1 OF 0 4</b>									
TITLE (4) <b>Design Basis Reconstitution Discovers Discrepancy in Design Flow Rates for the Containment Spray Pumps</b>																													
EVENT DATE (5)						LER NUMBER (6)						REPORT DATE (7)						OTHER FACILITIES INVOLVED (8)											
MONTH		DAY		YEAR		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		MONTH		DAY		YEAR		FACILITY NAMES											
0 5		1 9		8 7		8 7		0 1 4		0 0		0 6		1 8		8 7		<b>Turkey Point 4</b>											
0 5		1 9		8 7		8 7		0 1 4		0 0		0 6		1 8		8 7		<b>N/A</b>											
OPERATING MODE (9) <b>6</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)						20.405(c)						60.73(a)(2)(iv)						73.71(b)					
						20.406(a)(1)(i)						60.36(c)(1)						<input checked="" type="checkbox"/> 60.73(a)(2)(v)						73.71(c)					
						20.406(a)(1)(ii)						60.36(c)(2)						<input checked="" type="checkbox"/> 60.73(a)(2)(vi)						OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
						20.406(a)(1)(iii)						60.73(a)(2)(i)						60.73(a)(2)(viii)(A)											
						20.406(a)(1)(iv)						60.73(a)(2)(ii)						60.73(a)(2)(viii)(B)											
20.406(a)(1)(v)						60.73(a)(2)(iii)						60.73(a)(2)(ix)																	
LICENSEE CONTACT FOR THIS LER (12)																													
NAME <b>Randall D. Hart, Licensing Engineer</b>																TELEPHONE NUMBER <b>3 0 5 2 4 6 - 1 3 0 0</b>													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																													
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC																			
SUPPLEMENTAL REPORT EXPECTED (14)																EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR									
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)																<input checked="" type="checkbox"/> NO													

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On May 19, 1987, while Unit 3 was in mode 6 (Refueling) and Unit 4 was in mode 5 (cold shutdown), it was determined that a design discrepancy existed in the containment spray system. During the design basis reconstitution of the Containment Spray (CS) system, it was discovered that the system piping resistance was such that pump runout flow will exist. A review of the original calculations indicated that a restricting orifice was assumed to be present in the calculation. Upon discovery of this apparent discrepancy, a walkdown of the CS system discharge lines for both units was done which disclosed that the orifices assumed in the original calculation were not identified in the design documents or installed in the field. This results in the as built discharge piping for the CS pumps allowing flow in excess of the current analyses assumptions. This high flow-rate cannot be accommodated by the suction piping due to the CS pump net positive suction head (NPSH) requirements at elevated flows. A review of the original CS system flow calculations discovered that the original assumed flow orifice in the discharge line was not installed in the field. Design modifications will be implemented to correct this discrepancy prior to each unit entering mode 4 (hot shutdown) along with appropriate procedure changes. Also engineering will continue to evaluate the as found condition to determine its safety significance.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Turkey Point 3	05000250	87	014	00	02	OF 04

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

EVENT:

On May 19, 1987, while Unit 3 was in mode 6 (Refueling) and Unit 4 was in mode 5 (cold shutdown), it was determined that a design discrepancy existed in the containment spray system. During the design basis reconstitution of the Containment Spray (CS) system, it was discovered that the system piping resistance was such that pump runout flow could occur. A review of the original calculations indicated that a restricting orifice was assumed to be present in the calculation. Upon discovery of this apparent discrepancy, a walkdown of the CS system discharge lines for Unit 3 and 4 was done which disclosed that the orifice(s) assumed in the original calculation were not identified in the design documents or installed in the field. This results in the as built discharge piping for the CS pumps allowing flow in excess of the analyses assumptions. This high flow rate cannot be accommodated by the suction piping due to the CS pump net positive suction head (NPSH) requirements at elevated flows when the CS pumps are taking suction from the refueling water storage tank (RWST). During the recirculation phase there is no concern since the CS pump takes its suction from the discharge of the residual heat removal system pump which is at a sufficiently high pressure to satisfy the required NPSH of the CS pumps even at maximum runout flow they could achieve.

CAUSE OF EVENT:

A review the original CS system flow calculations discovered that the original assumption of a flow orifice in the discharge line was not incorporated in the field.

ANALYSIS OF EVENT:

This condition was discovered when Unit 3 was in a refueling outage and Unit 4 was in an extended maintenance outage. At that time, the CS system was not required to be operable on either unit. Permanent changes to the discharge lines for the CS pumps to install flow orifices will be completed for the respective unit prior to that unit entering mode 4 (hot shutdown).

The CS system design is being modified to add a flow reduction orifice in the discharge line of each CS pump. The orifices have been sized to assure that the minimum required spray flow of 1450 gallons per minute (GPM) can be achieved even at the containment design pressure of 60 psig. This orifice design, however, does not restrict flow sufficiently to completely eliminate pump runout concerns when the containment pressure is relatively low. The runout concerns exist only when both CS pumps are operating during the injection phase and the level in the RWST has dropped to the point where the static head provided by water in the RWST is no longer sufficient to provide an NPSH greater than that specified as being required by the CS pumps. It has been determined that a RWST level of at least 40 feet above the plant datum is required to satisfy NPSH requirements for containment pressures above 14 psig.



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)  Turkey Point 3	DOCKET NUMBER (2)  0 5 0 0 0 2 5 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	0 1 4	0 0	0 3	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

This was chosen because the plant's emergency operating procedures direct the operators to shut off the CS pumps if the containment pressure drops below 14 psig, so the pump runout and NPSH calculations assumed that operation of the CS pumps with containment pressure less than 14 psig has been precluded by operator action to stop the CS pumps.

In addition, the emergency operating procedures direct the operators to restrict the operation of the CS system to 1 pump when the level in the RWST reaches the low alarm setpoint. With only 1 CS pump in operation there is no longer any concern regarding available NPSH since, with the reduction in overall CS flow rate, there is commensurate reduction in the pressure drop in the CS pump suction line and increase in NPSH available.

Therefore, the addition of the orifice in the CS pump discharge lines and the increase in the low level alarm setpoint for the RWST will ensure that adequate NPSH will be available for the CS pumps.

The FSAR states in section 6.4, Containment Spray System, that adequate heat removal capability for the containment is provided by two separate, full capacity, engineered safety systems. These are the Containment Spray System, whose components operate in the sequential modes described in FSAR section 6.4.2, and the Emergency Containment Cooling and Filtering System which is discussed in FSAR section 6.3. The design basis for containment heat removal considers simultaneous operation of one spray pump and 2 of 3 emergency containment coolers. This is the basis for containment pressure transient calculations in FSAR section 14.

Since this discrepancy represents a condition which is not analyzed for either Turkey Point unit, additional evaluation is being done by our engineering department to determine the safety significance of this condition. Should this evaluation significantly change this LER, a LER update will be sent accordingly. Based on the above, the health and safety of the public was not affected.

CORRECTIVE ACTIONS:

- 1) Plant change / modifications (PC/Ms) have been developed for each unit to install a flow orifice in the discharge piping of the CS pumps and revise the low level alarm setpoint for the RWST. The flow orifices along with the increase in the low level alarm setpoint for the RWST will ensure adequate NPSH for the CS pumps in compliance with current analyses assumptions.
- 2) Upon completion of the PC/Ms and change in RWST low level setpoint, appropriate plant procedures will be revised and training requirements will be determined and implemented as necessary.
- 3) Engineering will continue to evaluate this discrepancy to determine the safety significance of the as found condition.

## 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 3	0 5 0 0 0 2 5 0	8 7	0 1 4	0 0	0 4	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

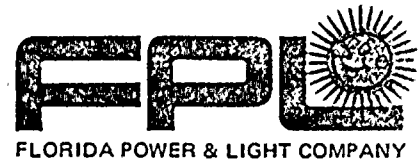
- 4) As a part of the confirmatory order associated with EA 86-20 issued August 12, 1986, Turkey Point is currently performing a Selected Safety System Review to assure that the Turkey Point Plant as built condition is consistent with the current licensing basis and has the capability within the systems to mitigate any of the design basis accidents and/or shutdown the plant.

ADDITIONAL DETAILS:

The CS pumps are horizontally mounted, centrifugal pumps and are constructed out of austenitic stainless steel. Each is rated at design flow conditions of 1450 gallons per minute (GPM) at a 470 foot discharge head. The CS pumps are a model 3736 4X6-13 pump manufactured by Goulds Pumps Inc.

Similar occurrences: None





JUNE 18 1987

L-87-249  
10 CFR 50.73

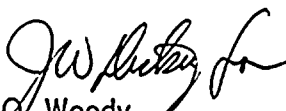
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 3  
Docket No. 50-250  
Reportable Event: 87-14  
Date of Event: May 19, 1987  
Design Basis Reconstitution Discovers Discrepancy  
in Design Flow Rates for the Containment Spray Pumps

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

  
C. O. Woody  
Group Vice President  
Nuclear Energy

COW/SDF/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC  
Senior Resident Inspection, USNRC, Turkey Point Plant

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