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ACCESSION NBR:9007270133 DOC.DATE: 90/07/23 NOTARIZED: NO DOCKET #
 FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
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SUBJECT: LER 90-014-00:on 900627,pressurizer PORV block valve may not
 close against max differential pressure conditions.

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JUL 23 1990

L-90-279
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: 90-014
Date of Event: June 27, 1990
Pressurizer Power Operated Relief Valve (PORV)
Block Valve May Not Close Against Maximum
Differential Pressure Conditions

The attached Licensee Event Report is being provided pursuant to the requirements of 10CFR50.73 as notification of the subject event..

Very truly yours,


K. N. Harris
Vice President
Turkey Point Nuclear Plant

KNH/DRP/dwh

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

9007270133 900723
PDR ADOCK 05000250
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 3										DOCKET NUMBER (2) 0 5 0 0 0 2 5 0 1										PAGE (3) 0 4																																
TITLE (4) Pressurizer Power Operated Relief Valve (PORV) Block Valve May Not Close Against Maximum Differential Pressure Conditions																																																				
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 N/A													DOCKET NUMBER(S) 0 5 0 0 0												
0 6			2 7			9 0			9 0			0 1			4			0 0			0 7			2 3			9 0			0 5 0 0 0																						
OPERATING MODE (9) 1										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																										
POWER LEVEL (10) 1 0 0										20.402(b)									20.406(c)									50.73(a)(2)(iv)									73.71(b)															
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										20.406(a)(1)(ii)									50.36(a)(2)									50.73(a)(2)(vii)									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)(viii)(A)																								
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LICENSEE CONTACT FOR THIS LER (12)																																																				
NAME David R. Powell, Licensing Superintendent															TELEPHONE NUMBER AREA CODE 3 0 5 2 4 6 - 6 5 5 9																																					
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)																																					
YES (If yes, complete EXPECTED SUBMISSION DATE)															X NO																																					

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

At approximately 2100, on June 27, 1990, with Unit 3 in Mode 1 at 100 percent power, plant management declared both pressurizer Power Operated Relief Valve (PORV) block valves inoperable. A preliminary engineering evaluation indicated that the Unit 3 PORV block valves may not close under maximum differential pressure conditions. This conclusion was based on block valve testing performed by EPRI in 1982 on behalf of a PWR Owners Group and a calculation performed by FPL to determine the valve operator thrust requirements. A torque switch setting above 82 ft-lbs is determined necessary to ensure sufficient thrust to operate the block valve. The Unit 3 PORV block valve operator torque switches were determined to be set below 82 ft-lbs. The Unit 4 PORV block valve operator torque switch settings were determined to be set above 82 ft-lbs. The cause for this condition is the minimum required thrust values specified by the valve and valve operator manufacturers are unconservative with respect to more modern methodologies used for calculating required thrust values. The Unit 3 PORV block valves were declared inoperable, closed and power was removed from the operators in accordance with the Action Statement requirements of Technical Specification 3.1.1.e.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	05000250	90	014	00	02	OF	04

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

DESCRIPTION OF THE EVENT

At approximately 2100, on June 27, 1990, with Unit 3 in Mode 1 at 100 percent power, plant management decided to declare both pressurizer Power Operated Relief Valve (PORV) block valves (EIIS:AB, Component:ISV) inoperable. A preliminary engineering evaluation performed to determine the operability of the Unit 3 and 4 PORV block valves indicated that the Unit 3 PORV block valves may not close under maximum differential pressure conditions. No problems were identified for the Unit 4 PORV block valves.

The PORV block valves are Velan three-inch gate valves with Limitorque SMB-000-5 operators. While responding to a telephone inquiry from another utility on the use of Limitorque SMB-000-5 operators for the PORV block valve application, the adequacy of the Limitorque SMB-000-5 operators became questionable. An informal hand calculation, using modern methodologies for the design and selection of operators, was performed that indicated the PORV block valve operators may not develop the thrust calculated to ensure valve closure against maximum differential pressure conditions. FPL Engineering was requested to perform a formal calculation to determine the thrust required to close the PORV block valves against a maximum differential pressure condition. The PORV block valve operator thrust requirement was calculated to be 6967 lbs which is equivalent to a torque switch setting of approximately 81 ft-lbs.

PORV block valve testing performed by EPRI on behalf of a PWR Owners Group in 1982 concluded that Limitorque SB-00-15 and SMB-000-10 operators would develop enough thrust to close the block valves at their lowest torque switch setting of 1.0, corresponding to 82 ft-lbs of torque. The required thrust identified by the original Limitorque data sheets for the Turkey Point SMB-000-5 PORV block valve operators is 5560 lbs to 8000 lbs, or approximately 64.5 ft-lbs to 90 ft-lbs of torque.

Upon determining that the Limitorque SMB-000-5 operators were adequate for their application, FPL Engineering reviewed the present thrust/torque values for the Unit 3 and 4 PORV block valve operators against an acceptance criteria of 82 ft-lbs which is more conservative than the calculated value of 81 ft-lbs. Both Unit 3 PORV block valve operator torque switch settings were determined to be below 82 ft-lbs, but within the vendor specified thrust range of 5560 lbs to 8000 lbs. Both Unit 4 PORV block valve operator torque switch settings were determined to be above 82 ft-lbs.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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	9 0	— 0 1 4	— 0 0	0 3	OF	0 4

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

At approximately 2116, on June 27, 1990, the Unit 3 PORV block valves were removed from service in accordance with the requirements of Technical Specification 3.1.1.e. At approximately 2120, on June 27, 1990, FPL notified the NRC Operations Center of a significant event in accordance with 10CFR50.72(b)(2)(iii)(D).

CAUSE OF THE EVENT

The cause for of this event is the minimum required thrust values specified by the valve and valve operator manufacturers are unconservative with respect to more modern methodologies used for calculating required thrust values.

ANALYSIS OF THE EVENT

Three code safety valves and two PORVs provide for pressurizer overpressure protection and control. The PORVs are operated automatically or by remote manual control and are provided to limit operation of the code safety valves by opening at a lower pressure than do the code safety valves. PORV operation is preferential to code safety valve operation because the PORVs have associated block valves that can be closed remotely if a PORV fails open. The code safety valves have no such block valves. A PORV that remains open after Reactor Coolant System (RCS) pressure is reduced to normal will result in an uncontrolled depressurization of the RCS until its associated block valve is shut by operator action. No credit is taken for the PORVs in the Turkey Point design bases, except for low pressure Overpressure Mitigation System (OMS) protection. The pressurizer code safeties provide primary overpressure protection and control.

The as-set PORV block valve operator torque switch settings would ensure valve closure for Reactor Coolant System pressures below 2080 psig. In low pressure OMS, the PORVs are set between 415 psig and 430 psig. Based on a review of plant operating curves, the block valves will operate satisfactorily while on low pressure OMS. Therefore, if a PORV were to be opened due to an OMS signal and then fail to close, the block valves would be able to isolate the PORV, even when combined with the worst case pressure transient.

The block valve operator torque switch setting of 82 ft-lbs does not represent a failure point. This setting is the lowest value available with the test equipment used by EPRI during

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Turkey Point Unit 3	0 5 0 0 0 2 5 0	9 0	0 1 4	0 0	0 4	OF	0 4

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

valve testing. The Unit 3 PORV block valve torque switch settings were within the original thrust requirements specified by the valve manufacturer. However, the block valves are being considered inoperable because they do not meet the thrust/torque criteria determined to be applicable by FPL Engineering. During the time the Unit 3 PORV block valve torque switches were set below 82 ft-lbs, they were not required to close to isolate a failed open PORV.

CORRECTIVE ACTIONS

1. The Unit 3 PORV block valves were declared inoperable, closed and power was removed from the operators in accordance with the Action Statement requirements of Technical Specification 3.1.1.e.
2. On-The-Spot-Changes (OTSCs) have been generated to General Maintenance Electrical (GME) procedure O-GME-102.4, "MOVATS Testing of Safety-Related Limitorque Motor Operated Valve Actuators," and Corrective Maintenance Electrical (CME) procedure O-CME-102.1, "Motor Operated Valve Operator Maintenance," to specify a minimum thrust of 7069 lbs for the PORV block valves. This value corresponds to a torque switch setting of 82 ft-lbs.
3. FPL plans to readjust the Unit 3 PORV block valve operator torque switches during the next unit outage of sufficient duration.
4. FPL is continuing work associated with Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." The NRC required actions will ensure that safety-related MOVs are selected, set, and maintained so that they will operate under design basis conditions for the life of the plant.

ADDITIONAL INFORMATION

No similar Licensee Event Reports have been located.

