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FACIL:50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-004-00:on 890523,loss of alternate hot leg injection flow path due to injection valve hydraulic locking.
W/8 ltr.

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P.O. Box 14000, Juno Beach, FL 33408-0420

JUNE 22 1989

L-89-224
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 89-04
Date of Event: May 23, 1989
Loss of Alternate Hot Leg Injection Flow Path
Due to Injection Valve Hydraulic Locking

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,

for C. O. Woody
Acting Senior Vice President - Nuclear

COW/JRH/cm

Attachment

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

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Turkey Point Unit 4	0 5 0 0 0 2 5 1	1 OF 0 3

TITLE (4) Loss of Alternate Hot Leg Injection Flow Path Due to Injection Valve Hydraulic Locking

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	DOCKET NUMBER(S)
										0 5 0 0 0
0 5	2 3	8 9	8 9	0 0 4	0 0	0 6	2 2	8 9		0 5 0 0 0

OPERATING MODE (9)	4
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Bryan Ford, Compliance Engineer	AREA CODE 3 0 5 — 2 4 6 - 6 5 9 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	B P	I S V	C 6 3 5	Yes					

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

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

On May 23, 1989, at 1820 EST, with Unit 4 in mode 4 and the reactor coolant temperature below 350 degrees, Residual Heat Removal (RHR) Motor Operated Valve MOV-4-751, RHR Normal Suction Isolation Valve, failed to open with the control switch. This valve was to be opened from the Alternate Shutdown Panel to place RHR in service for its normal heat removal function as part of an operability check of the panel. When this valve failed to open, the reactor continued to be cooled by removing heat through the steam generators. The valve was manually moved from its seat. The valve subsequently stroked smoothly with the control switch. The root cause of this event is hydraulic locking of the valve. To prevent recurrence of this problem, the valve has been modified with an equalizing line which will assure that the pressure in the bonnet of the valve is at an equal or lower pressure than the high pressure side of the valve. Additionally, MOV-4-750, the RHR valve immediately upstream of valve MOV-4-751, has been modified. The corresponding Unit 3 valves will also be modified to assure that these valves do not experience a hydraulic locking event. The Unit 3 valves, MOV-3-750 and MOV-3-751, will be modified prior to the unit's return to power.

EVENT

On May 23, 1989, at 1820 EST, with the Unit 4 in mode 4 and the reactor coolant temperature below 350 degrees, Residual Heat Removal (RHR - EIIS BP) Motor Operated Valve MOV-4-751, RHR Normal Suction Isolation Valve, failed to open with its control switch. The reactor was being cooled down from mode 2 in order to test the ability of the plant to shutdown the reactor using the Alternate Shutdown Panel by performing TP-522, "Unit 4 Alternate Shutdown Panel Performance Check." The Reactor Coolant System (RCS - EIIS AB) was being cooled down by use of the steam generators and MOV-4-751 was to be opened from the Alternate Shutdown Panel to place RHR in service in its normal RCS shutdown cooling mode. After MOV-4-751 failed to open the reactor continued to be cooled by use of the steam generators. The motor operator breaker for MOV-4-751 was reset, and two additional attempts were made to open the valve with the control switch, each resulting in the breaker tripping on thermal overload. Performance of the Alternate Shutdown Performance Check was halted and equipment control was returned to the Control Room. Maintenance was contacted and the valve was manually moved from its seat. At approximately 2220 EST the valve was smoothly stroked with the motor operator. On May 24, 1989, at approximately 1140 EST, the Alternate Shutdown Performance Check was restarted and subsequently successfully placed RHR in its normal shutdown cooling mode.

CAUSE OF EVENT

The root cause of this event is hydraulic locking of the valve. When the RCS pressure was lowered, to perform TP-522, water at the initial (higher) RCS pressure was trapped inside the bonnet and between the discs of the valve. This resulted in a high differential pressure forcing the discs more firmly against the valve seat. This hydraulic lock resulted in the motor operator being unable to overcome the friction between the valve discs and seats.

ANALYSIS OF EVENT

This valve is only required to be opened remotely to supply an alternate hot leg injection path to the RCS. This injection path directs flow through the RHR miniflow line and on through MOV-4-750 and MOV-4-751 resulting in the delivery of approximately 200 gallons per minute (gpm) to the vessel. The ability to supply alternate hot leg injection through this path was a commitment in a 1975 letter to the NRC. This flow path would only be required in the remote event of a Loss of Coolant Accident

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

concurrent with the passive failure of the pipe supplying the normal high head hot leg injection path. This type of passive failure is beyond the normal passive failure design bases of the RHR system of a 50 gpm leak. The normal shutdown heat removal function of RHR is not required by the accident analysis contained the Updated Final Safety Analysis Report for the plant to achieve a safe stable shutdown condition. Based on the above it is concluded that this event had no impact on the public's health or safety.

CORRECTIVE ACTIONS

Valve MOV-4-751 has been modified with an equalizing line which will assure that the pressure in the bonnet is at an equal or lower pressure than the high pressure side of the valve. In addition, it has been identified that the RHR valve, MOV-4-750, immediately upstream of MOV-4-751, and the corresponding Unit 3 valves, MOV-3-750 and MOV-3-751, may also be susceptible to hydraulic locking. Valve MOV-4-750 has been modified and the Unit 3 valves will be modified to assure that these valves do not experience a hydraulic locking problem. The Unit 3 valves, MOV-3-750 and MOV-3-751, will be modified prior to the unit's return to power operation.

ADDITIONAL INFORMATION

There have been no previous Licensee Event Reports in which the root cause was identified as hydraulic locking of a valve.

MOV-4-751 is a Copes Vulcan double disc valve.