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April 2, 1990
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United States Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

SUBJECT: DOCKET NO. 50-333
LICENSEE EVENT REPORT: 84-002-01

Dear Sir:

This Licensee Event Report is submitted in accordance with 10 CFR 50.73.

Questions concerning this report may be addressed to Mr. Daniel Ruddy at (315) 349-6506.

Very truly yours,

WILLIAM FERNANDEZ

WF:DR:lar

Enclosure

cc: USNRC, Region I
INPO Records Center
American Nuclear Insurers
NRC Resident Inspector

Acct No P100500614
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NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
JAMES A. FITZPATRICK NUCLEAR POWER PLANT	0 5 0 0 0 3 3 3	1 OF 0 4

TITLE (4)
Containment Cooling Inoperative

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 1	3 0	8 4	8 4	—	0 0 2	—	0 1	0 4	0 2	9 0		0 5 0 0 0
												0 5 0 0 0

OPERATING MODE (9)	N	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)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 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)	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
Daniel Ruddy	AREA CODE 3 1 5 — 3 4 9 — 6 5 0 6

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 I	5 2	G 0 8 0	Y							

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)

Update Report - Previous Report Date 2/23/84

EIIS Codes are in []

On 1/30/84 at 1051 hours while performing surveillance testing for an inoperative RHR service water [BI] pump, the B emergency service water [BI] pump breaker tripped as it was starting. This placed the plant in an LCO requiring that the reactor be in cold shutdown within 24 hours. After investigation and adjustment of the overcurrent trip devices for the B ESW pump breaker, it was restored to service at 1855 hours. On 2/3/84 it was determined that the pump breaker's setting were not correctly set due to test equipment being out of calibration. The pump was taken out of service for 35 minutes while the breaker was replaced with one correctly set. On 2/8/84 at 0420 hours while performing routine surveillance testing on the emergency diesel generators, the B ESW pump breaker again tripped as it was starting. This placed the plant in an LCO requiring that the reactor be in cold shutdown within 24 hours. After adjustment of the pump and breaker trip devices, the pump was restored to service at 1745.

In part, subsequent engineering evaluation determined the breaker trips were due to a design error. During May 1985 a plant modification replaced and recalibrated the breaker trip devices. The ESW pump breaker has not tripped on overcurrent since that time.

Update Report - Previous Report Date 2/23/84

EIIS Codes are in []

On January 30, 1984 at 1051 hours while performing the required surveillance testing for an inoperative "C" residual heat removal (RHR) service water [BI] pump (refer to LER-84-001), the "B" emergency service (ESW) [BI] pump breaker tripped as it was starting. The loss of "B" emergency service water pump combined with the inoperative "C" RHR service water pump placed the plant on a 24-hour reactor cold shutdown Limiting Condition for Operation (Technical Specification Section 3.11 and 3.5.B).

The "C" RHR service water pump provides 50% of the cooling flow to "A" RHR heat exchanger for the containment cooling and shutdown cooling modes. The "B" ESW pump provides cooling to the "B" emergency diesel generators which could be required on loss of off-site power to provide power to "B" side containment and shutdown cooling pumps and valves. Neither containment cooling nor shutdown cooling capabilities were completely lost however.

Investigation and troubleshooting commenced immediately. The "B" ESW pump motor was checked for grounds and shorted windings. None were found. The breaker overcurrent trip devices were checked for operation and setpoint using a breaker test set manufactured by E.I.L. Instruments, Inc. During the course of testing it was found that the overcurrent trip device setpoints were out of tolerance.

The breaker overcurrent trip devices were adjusted to the required settings, and "B" ESW was retested with satisfactory results. The pump was restored to service at 1855 hours on January 30, 1984.

On January 31, 1984 another breaker was being adjusted using the breaker test set. In this case, none of the overcurrent trip devices could be adjusted within tolerance. Although not an unusual occurrence to have difficulty adjusting overcurrent trip devices, this event prompted further investigation. Clamp-on ammeter checks over the lower range of the breaker test set suggested the possibility of a calibration error. The breaker test set had recently been repaired and calibrated by the manufacturer, so they were contacted to perform an evaluation on the equipment immediately. Due to other commitments the vendor was unable to perform the evaluation on January 31. On February 2, 1984 the vendor representative was present at the plant for the evaluation. It was found that the breaker test set was not calibrated correctly, indicating about 50% of applied amperage in the lower ranges. The test set was recalibrated and a review of past calibration uses showed the "B" ESW pump breaker trip devices had been adjusted upwared by approximately 50% on January 30, 1984. Immediately a spare breaker was set up to replace the "B" ESW pump breaker. To accomplish the breaker replacement, the "B" ESW pump was removed from

service for about 35 minutes on February 3, 1984. Due to "C" RHR service water pump still in the inoperative condition, the plant entered a 24-hour LCO. After breaker replacement, the "B" ESW pump was tested several times satisfactorily and restored to service.

During the period between January 30 and February 3, since the trip devices were set high, the "B" ESW pump would have performed it required function, if called upon.

On February 7, 1984 at 0537 hours the HPCI turbine was removed from service to perform scheduled preventive and minor corrective maintenance and a modification to the overspeed trip mechanism. This placed the plant in a 7-day LCO per Section 3.5.C of Technical Specifications. The planned outage duration was 2 to 3 days. On February 8, 1984 at 0420 hours during a routine surveillance test of emergency diesel generators (EDG), the "B" ESW pump failed to start. This placed the plant in an LCO requiring the reactor to be in cold shutdown within 24 hours (Technical Specification 3.5.C.1). Reinvestigation of the occurrence started immediately. Due to the two (2) previous occurrences, the breaker was tested for proper overcurrent trip device settings. The as-found values were 1950 amperes vs. the required 2150 (2000 to 2300) amperes. Also performed was an inspection of wiring connections, a check of pump clearances and ease of rotation. These checks revealed the pump clearances were 10 mils under those required to prevent rubbing between impeller and wear ring. The trip devices and the pump clearances were then adjusted to within tolerance. Furthermore, measurements of starting current were performed with the electrical distribution system lineup the same as it was at the time of the failure to start. This showed a starting current comparable to that specified by the manufacturer when corrected for variations in system voltage (vendor: 1510 amps at 575 volts; actual: 1633 amps at 613 volts). The narrow pump clearances and slightly reduced margin between the starting current and the instantaneous overcurrent trip device settings are probable causes for the breaker trip. However, no definite cause could be determined from these results. The "B" ESW pump was tested satisfactorily for operability and restored to service at 1745 hours on February 8, 1984. This returned the plant to a 7-day LCO.

Because the cause was undetermined, the following monitoring program was initiated. Daily, for one week, the pump was checked for operability. At the end of the week, the breaker was checked for any drift of overcurrent trip device setpoint. Then every other day, for a week, the pump was checked for operability. Again at the end of the week, the breaker was checked for overcurrent trip device setpoint drift. The operability was checked weekly for two weeks, then bi-weekly for a month. Finally, the surveillance interval for pump operability was returned to the normal monthly schedule. Through this testing it was believed that a better understanding of the cause would result, should this intermittent problem continue to exist.

The actual effect of having HPCI and "B" ESW pump inoperative simultaneously is minimal. Injection systems exist to backup the HPCI system and redundant containment cooling and shutdown cooling equipment exists to cover equipment inoperative as the result of a "B" ESW pump trip.

The monitoring program was conducted as described during February and March of 1984. The "B" ESW pump started as required and the breaker overcurrent trip device setpoint remained within tolerance during this period.

On December 18, 1984, while performing Surveillance Test F-ST-9D, the "B" ESW pump failed to start automatically as required. The pump also failed to start on a manual start signal. However, the pump did start on a second manual start signal and on a second automatic initiation. The pump motor winding and feeder cable were inspected and tested and determined to be in good condition. The pump breaker was inspected and tested. Through this testing it was determined that one of the overcurrent trip devices had failed and was causing the intermittent breaker trips. The device was replaced, the breaker tested satisfactorily, and the "B" ESW pump was restored to service.

During normal operation on February 5, 1985 the "A" ESW pump tripped during start-up for routine surveillance (refer to LER-85-003). The overcurrent trip devices on all three phases were replaced and the breaker was returned to service. A program of increased surveillance was initiated for the "A" ESW pump. At that time, an engineering evaluation of the breaker overcurrent trip settings was performed. The overcurrent trip device had two elements (long-time and instantaneous). The instantaneous pickup was specified to be 2800 amperes. The trip device had a tolerance of ±10 percent, therefore the trip range was 2500 amps to 3100 amps. These values coordinated properly with the unit substation main breaker. However, the theoretical motor in-rush current of 2748 amperes (12 x 229 full load amperes) overlapped the trip range. Because the in-rush current varies during each motor start, the intermittent tripping may have been due to trip setpoints. The instantaneous pickup could not be increased because it would not coordinate with the main breaker. On April 10, 1985 a plant modification was initiated to replace the ESW pump breaker trip devices with a three element device (long-time, short-time, and instantaneous). Also, a solid state device was selected in place of the electro-mechanical devices. The short-time pickup was set at 2800 amps to maintain coordination with the main breaker. The instantaneous pickup could then be set at 3200 amps to eliminate the overlap with the motor in-rush current. The modification was completed in May 1985. No ESW pump breaker overcurrent trips have occurred since that time. It is, therefore, concluded that the subject breaker trips were due to a design error as well as faulty trip devices. No further corrective action is required.