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SUBJECT: LER 89-008-00:on 890809,CSP out of svc for maint for longer than Tech Spec allowed period due to motor vibration.

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

SEPTEMBER 7 1989

L-89-327
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: 89-08
Date of Event: August 9, 1989
Containment Spray Pump Out of Service for Maintenance for Longer than Technical Specification Allowed Period Due to Unexpected Increase in Motor Vibration

The attached Licensee Event Report (LER) 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
Acting Senior Vice President - Nuclear

COW/JRH/cm

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 4

TITLE (4) Containment Spray Pump Out Of Service For Maintenance For Longer Than Technical Specification Allowed Period Due To Unexpected Increase In Motor Vibration

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 8	0 9	8 9	8 9	— 0 0 8	— 0 0	0 9	0 7	8 9		0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	1 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)	X 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
Dennis W. Herrin, Regulation and Compliance Engineer	AREA CODE 3 0 5 — 2 4 6 - 6 7 4 9

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
B	B E	M O	W 1 2 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)

At 0930 on August 9, 1989, the 4A Containment Spray Pump (CSP) exceeded the Technical Specification (TS) Limiting Condition for Operation by remaining out of service for more than 24 hours. The CSP was removed from service at 0930 on August 8, 1989 to perform maintenance aimed at reducing pump vibration levels from the "Alert" range to the acceptable range. After realigning the pump and motor, the motor and pump vibration levels increased into the "Required Action" range. Adding weights to the pump and motor couplings reduced the pump vibration to within the "Alert" range, however, the motor vibration remained in the "Required Action" range. A decision to replace the CSP motor with a spare motor required more time than allowed by the TS. Discussions were held with the NRC and discretionary enforcement was obtained to allow one CSP to be inoperable for 72 hours. With vendor assistance, the 4A CSP was returned to service at 2322 on August 10, 1989. The cause for this event is attributable to installation which led to stresses induced into the motor casing. FPL believes unevenness in either the motor feet and/or the mounting base plate led to the inability to reduce motor vibration levels after realigning the pump and motor. The mounting base plate and motor feet will be examined and worked as necessary during the next refueling outage.

Description of the Event

At 0930 on August 9, 1989, with Unit 4 in Mode 1 at 100% power, the 4A Containment Spray Pump (CSP) (EIIS System Code BE, Component Code P) exceeded the Technical Specification (TS) Limiting Condition for Operation (LCO) limit by remaining out of service for longer than 24 hours. Plant Technical Specification 3.4.2.b.2 limits the period a CSP can be out of service to 24 hours. The 4A CSP was removed from service at 0930 on August 8, 1989, and was returned to service at 2322 on August 10, 1989.

Prior to August 8, 1989, inservice testing of the 4A CSP had identified an increase in pump vibration into the "ALERT" range (1.4 mils to 2.1 mils for inboard horizontal). Based on this, it was determined prudent to investigate possible corrective measures before the pump vibration reached the "Required Action" range (greater than 2.1 mils for inboard horizontal).

A pre-planning meeting was held and possible corrective measures were discussed. Checking the mechanical alignment, realigning as necessary, and balancing the pump and motor couplings were recommended to reduce vibration levels on the pump. The 24 hour time frame allowed by TS 3.4.2.b.2 was considered to be adequate to complete these activities.

At 0930 on August 8, 1989, the 4A CSP was taken out of service and testing was initiated. The mechanical alignment check was performed with unsatisfactory results. The pump and motor were then realigned. A subsequent balance check performed with the pump and motor coupled indicated a further increase in motor and pump vibration into the "Required Action" range (greater than 6.0 mils for the motor and greater than 2.1 mils inboard horizontal for the pump). After adding weight to the pump and the motor couplings, the pump vibration levels were reduced to within the "Alert" range (between 1.4 mils and 2.1 mils inboard horizontal), but the motor vibration levels remained within the "Required Action" range. Note that the motor vibration readings are either acceptable or require action. No "Alert" range is specified. The "Required Action" range for CSP motor vibration was developed by FPL Engineering since pump drivers are excluded from ASME Section XI Inservice Testing. Additional attempts to reduce the motor vibration were unsuccessful.

At 0300 on August 9, 1989, an Event Response Team (ERT) was formed to evaluate the 4A CSP motor vibration condition. The ERT recommended that the motor be replaced with a spare CSP motor. Management concurred with the ERT recommendation. CSP motor replacement and testing was determined to require approximately 30 additional hours of work. The associated TS Limiting Condition for Operation (LCO) requires that the unit be placed in Cold Shutdown if the inoperable CSP pump cannot be returned to an operable status within 24 hours.

Turkey Point has been converting the existing custom Technical Specifications (TS) to a form similar to the Westinghouse Standardized Technical Specifications issued by the NRC. The TS project has reached the Final Draft stage, with the Final Draft TS submitted to the NRC on June 5, 1989. The proposed

new TS limit for a single CSP out of service is 72 hours. Based on the proposed change and No Significant Hazards Consideration, verification of the operability of the other train CSP, and the availability of the emergency containment coolers and filters, the NRC Region II office was contacted to request discretionary enforcement. This would allow enough time to replace the 4A CSP motor. The resident inspectors and the Region reviewed the circumstances and agreed to extend the LCO limit from 24 to 72 hours.

After replacing and aligning the motor, a balance check revealed vibration levels higher than those experienced on the original motor. When attempts to reduce the vibration levels to within an acceptable range failed, Westinghouse was contacted for assistance. The motor vibration level improved significantly after mounting bolt tensions were relieved as recommended by Westinghouse. After shimming the motor, a motor mounting bolt still had to be loosened to reduce vibration levels to an acceptable level.

At 2322 on August 10, 1989, the 4A CSP was returned to service after satisfactory completion of Inservice Testing. Vibration levels on both the pump and the motor were within the acceptable range.

Cause of the Event

The cause of this event is attributable to installation which led to stresses induced into the motor casing. FPL believes that unevenness of either the CSP motor feet and/or the mounting base plate led to the inability to reduce motor vibration levels after correcting the mechanical alignment.

Analysis of the Event

The Turkey Point Containment Spray System consists of two pumps, either of which is capable of removing the postulated post-accident containment atmosphic heat loads. The opposite train of the Containment Spray System remained operable during the period the 4A CSP was out of service. The three emergency containment coolers and the three emergency containment filters were also maintained operable during this period.

Declaring the 4A CSP operable with one of four base plate mounting bolts finger tight in order to reduce motor vibration was evaluated by Turkey Point Engineering. This review concluded that the qualification and design basis of the motor (seismic and normal operation) would be maintained with one of the four mounting bolts finger tight or snug tight. The induced loading in the support bolting is unaffected as demonstrated by calculation. Based on the above, this event did not affect the health and safety of the public.

Corrective Actions

1) The 4A CSP motor was replaced with a new motor. The motor and pump were aligned and vibration measurements were taken prior to coupling. To reduce vibration to acceptable levels, one of the four base plate mounting bolts was left snug-tight and Loc-tited with approved thread sealant. This condition was analyzed by Nuclear Engineering to be acceptable.

2) Maintenance Procedures (MP) 4207.1, "Containment Spray Pump Motor Overhaul and Maintenance," and 4207.2, "Containment Spray Pump Disassembly, Repair and Assembly," will be revised to include a requirement to perform vibration analysis on the motor following pump to motor alignment but before coupling.

3) The mounting base plate and motor feet will be examined and worked as necessary during the next Unit 4 refueling outage.

Additional Information

The 4A CSP motor was manufactured by Westinghouse Electric Corporation, Model number TBDP.

Although due to a different cause, a similar event was reported in LER 50-250/88-016.