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August 5, 2003
JAFP-03-0112

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: **Docket No. 50-333**
LICENSEE EVENT REPORT: LER-02-001-01 (CR-JAF-2002-02721)

Both Trains of Core Spray and One RHR Pump Inoperable Due To Out of Tolerance Pump Start Time Delay Relays

Dear Sir:

LER-02-001Revision 0 was submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), "any operation or condition which was prohibited by the plant's Technical Specifications", and 10 CFR 50.73(a)(2)(vii), "any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (B) Remove residual heat and (D) mitigate the consequences of an accident." This revision to that report is submitted to document that long term corrective actions, replacement of Core Spray and Residual Heat Removal timers, will not be completed as stated in the original report.

After reviewing the technical requirements, personnel safety requirements, post work testing, and plant risk factors associated with the timer modification the FitzPatrick staff has concluded that the optimal conditions for implementation of the modification would be during a plant outage. Based on that conclusion implementation of the modification package will be scheduled for the next refueling outage and administrative controls requiring increased calibration frequency of the existing timers will remain in place until the modification is completed.

There are no new commitments contained in this report.

Questions concerning this report may be addressed to Mr. Gene Dorman at (315) 349-6810.

Very truly yours,

T. A. Sullivan

TAS:ED:ed
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Both Trains of Core Spray and One RHR Pump Inoperable Due To Out of Tolerance Pump Start Time Delay Relays

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000
07	22	02	02	– 01 –	01	07	31	03	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	N
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)	X	50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. Darren Deretz, Sr. Reg. Compliance Specialist	(315) 349-6851

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	BM	RLY	A217A	Y	B	BO	RLY	A217A	Y

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

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 22, 2002, with the reactor at 100 percent power, during the performance of the Core Spray (CS) Initiation Logic System Functional Test 3J (ST-3J), it was determined that the time delay for both "A" and "B" division CS pump start time delay relays exceeded the values required by Technical Specifications (TS). As part of the extent of condition evaluation on August 24, 2002, with the reactor at 100 percent power, the "C" and "D" Residual Heat Removal (RHR) Pump Start Timer Temporary Surveillance Test 120 (TST-120) was performed on the associated pump start time delay relays. During this test, it was determined that the time delay for the "D" RHR pump start time delay relay exceeded the value required by TS by 0.03 seconds.

The equipment related root cause of the out of tolerance condition was a lack of relay "exercising" due to the extended test interval of the relays. The human performance related root cause was failure to assume the relay drift was time dependent, as required by procedure. A contributing cause was identified as inadequate guidance in a calculation verification checklist that allowed operating experience considerations to be neglected.

Interim corrective actions included recalibrating the CS and RHR relays and increasing their test frequency. Long-term corrective actions include replacement of the subject relays with a more suitable device and revising the associated calculation verification process.

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

EIIS Codes in [ ]

Event Description:

On July 22, 2002, with the reactor at 100 percent power, during the performance of the Core Spray (CS) Initiation Logic System Functional Test 3J (ST-3J), it was determined that the "A" division Core Spray (CS) [BM] pump start time delay relay exceeded the value required by Technical Specifications (TS) by 0.34 seconds. The "A" pump start time delay relay was immediately recalibrated, which restored operability to the "A" division of CS. The "B" pump start time delay relay was then tested and found to exceed the value required by TS by 0.38 seconds. The "B" pump start time delay relay was immediately recalibrated, which restored operability to the "B" division of CS.

On August 24, 2002, with the reactor at 100 percent power, the "C" and "D" Residual Heat Removal (RHR) [BO] Pump Start Timer Temporary Surveillance Test 120 (TST-120) was performed on the associated RHR pump start time delay relays as part of the extent of condition inspection for the aforementioned CS relay issue. During this test, it was determined that the "D" RHR pump start time delay relay exceeded its associated TS value by 0.03 seconds, which rendered the pump inoperable. The "D" RHR pump start time delay relay was immediately recalibrated during the performance of TST-120, which restored the operability of the "D" RHR pump. The "A" and "B" RHR Pump Start Timer Temporary Surveillance Test 119 (TST-119) was performed previously with acceptable results.

The cause of these deviations was determined to be a lack of relay "exercising". Conservatively, the inoperable relays were assumed to render the two CS pumps and the "D" RHR pump inoperable, each for a duration exceeding 7 days (TS limit). The last successful demonstration of the CS and RHR pump start time delay relays was during September and October of 2000, when they were recalibrated and tested.

Both CS pumps and the "D" RHR pump were determined to be inoperable as a result of their respective inoperable pump start time delay relays. Consequently, this report is being submitted in accordance with 10CFR50.73(a)(2)(vii), "Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (B) Remove residual heat and (D) Mitigate the consequences of an accident.

Since both CS pumps and the "D" RHR pump were conservatively assumed to be inoperable for a period greater than 7 days, the aforementioned TS requirements were not met. Consequently, this report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications..."

Cause of Event:

The equipment related root cause of the out of tolerance condition was a lack of relay "exercising" due to the extended test interval (6 months to 24 months). This increased the "inactive period" of the relays, which also increased their time dependent unpredictability, particularly at a setpoint that is higher in the relay's range. The CS relay setpoint of 11 seconds is at approximately 70% of its stated range (1.5 –15 seconds). This relatively high setting (relative to the range) correlates with the time dependent unpredictability of the subject relays. The RHR relays have setpoints of 1.25 seconds and 6 seconds, which are at 17% and 33% of their stated ranges, respectively. This corroborates the RHR timer performance in that only one out of four RHR pump timers tested out of tolerance by a relatively small amount of time (0.03 seconds). [Cause code B]

Cause of Event (continued):

The human performance related root cause was identified to be a failure to follow step 6.10.5 of Design Standard IES-5A, Evaluation of Calibration Information, during the completion of the associated relay Drift Study. The Drift Study concluded that the subject Agastat relays performed in a time independent fashion whereas procedure step 6.10.5 requires the subject relays to be assumed time dependent whenever the span of the PERIOD variable is not large enough to cover the area of concern. The subject data set only included relays tested on a 6 month or less frequency. The preparer and reviewer incorrectly assumed that it was adequate to conclude time independence if the Drift Study analyzed the data sufficiently, even though this conclusion violated the procedural requirement. [Cause code A]

A contributing cause was identified as inadequate guidance in a calculation verification checklist that allowed operating experience considerations to be neglected in the associated relay setpoint calculation. [Cause code D]

Event Analysis:

The function of the CS pump start time delay relay(s) is to delay the start time of the CS pumps to avoid simultaneous starting of the CS pumps with other emergency power loads, such as the RHR pumps, that could overload the Emergency Diesel Generators (EDGs) [EK]. The consequence of delaying the CS pump starts by 0.34 and 0.38 seconds respectively was analyzed to determine if this condition would have impacted the operability of the EDGs or prevented the CS pumps from satisfying the assumptions made in the JAF Loss of Coolant Accident (LOCA) Analysis.

The JAF FSAR indicates that during the Emergency Core Cooling System/EDG auto-start sequence, the CS pumps are at rated speed 27 seconds after receipt of the LOCA signal. This delay accounts for the EDG start sequence as well as the CS pump start time delay and CS pump acceleration. The out of tolerance condition resulted in a time delay which would have resulted in the CS pumps starting later in their automatic start sequence relative to the other EDG loads and therefore would not have impacted the operability of the EDGs.

The JAF LOCA Analysis assumed that the maximum allowable delay time from initiation signal to the time the CS pump is at rated speed and capable of rated flow (including EDG start/load time) is 30 seconds. Adding a bounding time period of 0.40 seconds to the time required for the CS pumps to achieve rated speed (and therefore rated flow) as described in the FSAR, results in a composite CS injection time delay that is below (more conservative than) the value assumed in the LOCA analysis (30 seconds).

The RHR "D" pump start time delay relay was also found to be out of tolerance during TST-120, performed on 8/24/02. The relay was found to exceed the upper limit of its setpoint tolerance by 0.03 seconds. Conservatively assuming that the CS and RHR relay out of tolerance conditions existed concurrently, there is no setpoint "overlap" condition where multiple EDG loads are initiated concurrently which would create the potential for EDG overloading.

The safety significance of this event is therefore low because the system safety function would have been achieved in accordance with the assumptions made in the design basis safety analysis.

Extent of Condition:

This condition is applicable to the CS [BM] and RHR [BO] pump start time delay relays. Other Agastat Model E7000 series relays were ruled out of the extent of condition evaluation using the following characteristics: time critical applications, on-delay (normally de-energized), located in 125 VDC or 120 VAC circuits, failure history, different time ranges, and position of setpoint in the relay range.

Corrective Actions:

ST-3J directs, that if the CS pump start time delay relays are found out of tolerance, that they immediately be calibrated as part of the surveillance test. This condition was therefore initially corrected on the spot. The RHR pump start time delay relay out of tolerance condition was also corrected on the spot, in accordance with TST-120.

1. Change the test frequency of CS safety related Agastat E7012 time delay relays to 6 months or less as an interim measure.

   (Complete)
2. Change the test frequency of the RHR safety related Agastat E7012 time delay relays to 6 months or less as an interim measure.

   (Complete)
3. Complete installation of the replacement devices for the CS and RHR E7012 time delay relays.

   (Scheduled Completion Date: Refueling Outage 16)
4. Provide training/guidance on how and when to apply Evaluation of Calibration Information Design Standard (IES-5A), step 6.10.5, and incorporate into the qualification card process.

   (Complete)
5. Revise calculation verification process to require use of operating experience as opposed to listing it as an option.

   (Complete)

Safety System Functional Failure Review

Since the three operable RHR pumps would have been capable of supporting normal shutdown cooling and suppression pool cooling functions, this event did not result in a safety system functional failure in accordance with NEI 99-02, Revision 2. Also, although "inoperable" due to the out of tolerance relays, the CS and "D" RHR pumps would have started and performed their safety function.

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Similar Events

1. JAF LER-99-007 "Both Trains of Core Spray Inoperable Due To Out of Tolerance Time Delay In Pump Start Interlock Relays", October 26, 1999.

Failed Component Identification

Manufacturer:	Amerace
Model Number:	E7012
NPRDS Manufacturer Code:	A217A
NPRDS Component Code:	Relays
FitzPatrick Component ID:	71-62-5-1HOEA03 (CS "A")
	71-62-5-1HOEB03 (CS "B")
	71-62-3-1HOEB03 (RHR "D")

References

1. JAF Condition Report CR-JAF-2002-02721 and associated Root Cause Analysis.
2. JAF FSAR Sections 6 and 7.
3. Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 263 to Facility Operating License No. DPR-59, Power Authority of the State of New York, James A. FitzPatrick Nuclear Power Plant, Docket No. 50-333.
4. JAF-RPT-MULTI-02903, Rev.0, Surveillance Extension Report (s) for Logic System Functional Testing, Drift Study BCPDS02.
5. Design Standard IES-5A, Evaluation of Calibration Information.
6. NEI 99-02, Regulatory Assessment Performance Indicator Guidance.
7. EPRI TR-103335 Rev. 1, October 1998, Guidelines for Instrument Calibration Extension/Reduction Programs.
8. NEDC 31317P, Revision 2, "James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis", GE Nuclear Energy, April 1993.