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March 26, 1992
JAFP-92-0263

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

SUBJECT: DOCKET NO. 50-333
LICENSEE EVENT REPORT: 92-013-00 - Environmental Enclosure HVAC

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii) and (v).

Questions concerning this report may be addressed to Mr. W. Verne Childs at (315) 349-6071.

Very truly yours,

RADFORD J. CONVERSE

RJC:WVC:lar

Enclosure

cc: USNRC, Region I
USNRC Resident Inspector
INPO Records Center

Control No P06470549G

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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)
JAMES A. FITZPATRICK NUCLEAR POWER PLANT	0 5 0 0 0 3 3 3 5	1 OF 0 5

TITLE (4) Environmental Enclosures Which Provide a Mild Environment for Safety-Related Equipment Found with Design Different Than Described in FSAR

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 2	2 6	9 2	9 2	— 0 1 3	— 0 0	0 3	2 6	9 2		0 5 0 0 0
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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)	0 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)	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
W. VERNE CHILDS, SENIOR LICENSING ENGINEER	AREA CODE 3 1 5 — 3 4 9 — 6 0 7 1

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	

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)

EIIS Codes are in []

The plant was shutdown and in the cold condition for maintenance and refuel. On 2/26/92 it was determined that the actual design and the design as described in the Final Safety Analysis Report (FSAR) differ for the air conditioning system for environmental enclosures installed to provide a mild environment for Residual Heat Removal/Low Pressure Coolant Injection [BO] motor operated valve independent power supplies and safety-related 600 VAC load centers [ED] located in the reactor building [NG]. The actual design requires local manual reset of low oil pressure trips of the environmental enclosure air conditioning equipment and local manual selection of the "primary" and "back-up" air conditioning units. These manual actions may not be possible following an accident because the reactor building may not be accessible due to radiation, temperature, pressure, and/or humidity conditions that could exist as a result of a potential Loss of Coolant Accident or High Energy Line Break. LER-91-027 described another condition in which environmental enclosures did not meet design requirements.

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(9-83)

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Description

The plant was shutdown and in the cold condition for maintenance and refuel. Environmental enclosures were installed in 1988 in order to maintain Safety Divisions 1 and 2 600 VAC load centers 71L-15 and 71L-16 [ED], as well as Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) [BO] motor operated valve (MOV) independent power supply inverters 71INV-3A and 71INV-3B in a mild environment during potential High Energy Line Break (HELB) and/or Loss of Coolant Accident (LOCA) events. The RHR/LPCI MOV independent power supply inverters and 600 VAC load centers 71L-15 and 71L-16 are physically located within the reactor building [NG] thus HELB and/or LOCA events could result in a harsh environment at the equipment due to pressure, temperature, humidity, and/or radiation. The environmental enclosures are designed to protect the enclosed equipment from these potential harsh conditions.

Load centers 71L-15 and 71L-16 provide power to numerous MOVs in the RHR/LPCI, core spray [BM], reactor building [NG] (secondary containment) isolation, and primary containment [NH] isolation systems as well as providing power to other safety-related systems and components. The RHR/LPCI MOV independent power supply inverters provide power to reactor water recirculation system [AD] and RHR/LPCI valves without reliance on the Safety Division 1 or 2, 600 VAC, or 120 VDC [EJ] power system.

Each of the four environmental enclosures is provided with two independent, 100 percent capacity cooling (air conditioning) units. The air conditioning system controls are arranged to allow selection of one (1) air conditioning unit as the "primary" (or lead) unit with the other unit selected as a "back-up" for the primary unit. The selection of a unit as primary or back-up is periodically changed to equalize operating time.

Since the original installation in 1988, the units have had a history of tripping on low oil pressure when unit start-up is attempted after the unit has been idle. On October 19, and 30, 1991, work requests were written to request investigation and repair of two units which experienced low oil pressure trip when an attempt was made to start the units. Subsequent discussions with the vendor revealed that low oil pressure trip, when attempting to start the unit after an extended idle period, is normal. The low oil pressure trip is due to "flashing" of liquid refrigerant which slowly collects in the unit compressor crank case during idle periods.

Repeated attempts to start the unit eventually result in successful start-up because each start attempt reduces the amount of collected refrigerant. Once the amount of refrigerant has been reduced to the point where normal oil pressure will be achieved prior to the expiration of the low oil pressure time delay timer, start-up of the unit is normal.

The vendor also noted that the problem of low oil pressure trip during attempted start-up is observed most often on units that have been idle for more than one month. As a result, the vendor recommends periodic switching of units from "back-up" to "primary" status to limit the back-up (idle) time duration.

The design of the environmental enclosures (and associated air conditioning units) is intended to maintain a mild environment for the equipment within the enclosures for 180 days following LOCA or HELB accidents without requiring personnel access to the reactor building. On February 26, 1992 it was determined that since reset of a low oil pressure trip condition is manual and switching air conditioning units from "back-up" to "primary" is also manual, that is, local access within the reactor building is necessary, the actual design of the air conditioning units (and thus the design of the environmental enclosures) is not consistent with the design described in Final Safety Analysis Report (FSAR), Section 9.9. Specifically, the operability of the "back-up" air conditioning unit for each environmental enclosure cannot be assured during the 180-day period following any accident (LOCA or HELB) which results in the reactor building being inaccessible. This is because that back-up unit "idle duration time" could result in trip of the back-up unit on any attempted automatic start-up as a result of failure of the operating (primary) unit. As noted above, the attempted automatic start-up of the back-up unit would be expected to fail as a result of low oil pressure if a sufficient quantity of refrigerant has collected in the unit compressor crank case. In addition, since the primary and back-up unit selection requires reactor building access, this periodic switching is not possible following an accident.

Cause

The event was caused by an incomplete understanding of the design and operation of the environmental enclosure air conditioning equipment. When it was understood that low oil pressure trip of a unit during attempted start-up is normal if the unit has been idle for an extended time period, the cause of the chronic reports of repeated low oil pressure trips was obvious.

Analysis

Failure of air conditioning units and failure of the back-up units to automatically start would result in the effected environmental enclosures being incapable of maintaining a mild environment for the equipment within the enclosures.

In the case of the enclosures for LPCI MOV independent power supply inverters, which are required to be operable for 30 days following an accident to support operability of RHR/LPCI, the failure of the air conditioning systems could result in failure of systems designed to mitigate accidents discussed in the FSAR. As a result, the event requires a report under 10 CFR 50.73(a)(2)(v)(B) and (D).

In the case of enclosures for 600 VAC load centers 71L-15 and 71L-16, which are required to be operable for 180 days following an accident to support operability of RHR/LPCI, core spray, primary containment isolation, reactor building [NG] (secondary containment) isolation and standby gas treatment [BH] as well as portions of other systems, the failure of the air conditioning systems could result in failure of these systems. As a result, the event is again reportable under 10 CFR 50.73(a)(2)(v)(B), (C), and (D).

In addition, as noted above in the event description, since the actual design of the environmental enclosures (including the air conditioning systems) is different than that described in the FSAR, the event is reportable under 10 CFR 50.73(a)(2)(ii)(B) because the differences result in a condition which is outside the design basis of the plant.

Corrective Action

1. No immediate corrective action was required because the plant had been shutdown since November 28, 1991. LOCA and HELB accidents are not credible events under these conditions.

2. The environmental enclosure air conditioning system controls will be modified prior to plant start-up to provide remote reset (or automatic reset) of the low oil pressure trip function as well as providing the capability for remote start-up of the air conditioning equipment. These modifications will assure operability of the air conditioning (and thus operability of the enclosures and the equipment within the enclosures) during time periods when the reactor building may be inaccessible due to an accident. Scheduled due date May 15, 1992.

3. The FSAR will be updated (if necessary) to provide an accurate description of the environmental enclosure air conditioning systems following completion of the modifications. It is anticipated that the FSAR changes (if any) will be included in the scheduled July 1993 update.

4. Engineering personnel will (with the assistance of an air conditioning consultant, if necessary) determine the optimum interval for shifting the air conditioning units from "primary" to "back-up" service and prepare appropriate changes to operating procedures to implement the recommendations. Due date September 15, 1992.

Additional Information

Failed Components: None

Previous Similar Events: LER-91-027 described a similar event in which environmental enclosures would not provide an adequate mild environment for the equipment within the enclosure.