NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 1	05000245	1 of 3

TITLE (4)

Failure To Verify The Emergency Diesel Air Start Requirements

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	23	96	96	055	00	11	22	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	000	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	[X] 50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Robert W. Walpole, MP1 Nuclear Licensing Manager	(860)440-2191

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	MONTH	DAY	YEAR
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE).	[X] NO				

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

On October 23, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, an audit of operating procedures identified that the acceptance criteria for air receiver pressure in the Emergency Diesel Generator (EDG) air start system may not have been in accordance with the Updated Final Safety Analysis Report (UFSAR). On November 12, 1996, investigation determined that the starting air system had been operated outside the Plant's Design Basis, and therefore, it was reported pursuant to 10 CFR 50.72(b)(2)(i). There were no automatic nor manually initiated safety system responses as a result of this event.

This LER is being reported in accordance with the requirements of 10 CFR 50.73(a)(2)(ii). The cause of this event is the failure to properly identify and verify the design basis of the EDG air start system. The safety consequence is minimal since it was demonstrated during the original preoperational testing that at least two EDG starts had been available, while the safety analysis assumes that given one unsuccessful EDG start, the gas turbine is relied upon for accident mitigation.

The pressure requirements of the air receivers will be established through a special test and the UFSAR and the surveillance procedures will be revised accordingly. Additionally, a review to determine other possible discrepancies between the UFSAR and surveillance procedures is ongoing.

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

I. Description of Event

On October 23, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, an audit of operating procedures as part of the design basis verification effort identified that the DC compressor on the EDG air start system may not have started at the 225 psig as described in the UFSAR. It was discovered that the surveillance test, SP 668.1, "Diesel Generator Operational Readiness Demonstration," documented that the DC compressor has started at a pressure as low as 215 psig.

On November 12, 1996, investigation determined that, the preoperational test, that was performed to demonstrate that the EDG air start system was capable of three EDG starts, is the only documenting evidence of the pressure requirements of the EDG air start system. This test initiated the first of three EDG starts at 250 psig. Thus, it was determined that the EDG air start system had been operated outside the Plant's Design Basis. A report was made pursuant to 10 CFR 50.72(b)(2)(i). There were no automatic nor manually initiated safety system responses as a result of this event. This LER is being reported in accordance with the requirements of 10 CFR 50.73(a)(2)(ii).

The operational status of the EDG was inoperable at the time of this event and the EDG will remain inoperable until the EDG air start system pressure requirements have been established and validated by test.

II. Cause of Event

The cause of this event is the failure to properly identify and verify the design basis of the EDG air start system. The original FSAR did not clearly identify the design basis, subsequent revisions to the UFSAR did not clarify this design basis and the preoperational and subsequent surveillance testing failed to adequately verify the design basis.

III. Analysis of Event

The EDG is one of two sources of emergency power, the other being a Gas Turbine Generator, utilized to mitigate the consequences of a Loss of Normal Power.

The EDG system is designed with a compressed air system to achieve a diesel start. This consists of two air receivers, two air compressors, valves and interconnecting piping. One air compressor is powered from the normal 480 VAC supply, while the other, a smaller, backup compressor, is powered from the 125 VDC supply.

The diesel generator operational readiness surveillance, includes a section that demonstrates that the DC powered compressor starts between 215 - 220 psig. However, the UFSAR states that "The two air compressors are started if the pressure in the reservoirs falls to 225 psig".

Investigation into this discrepancy has revealed that the original FSAR stated that the starting air pressure is 250 psig and that each air receiver contains sufficient inventory to start the diesel three times, without recharging. This was successfully demonstrated in the preoperational test by performing three starts, beginning with the initial start at an air pressure of 250 psig and subsequent starts at 200 psig and 175 psig. During the preparation of the UFSAR, a statement was added that the compressors start at 225 psig, however, no supporting documentation was found that provides reasonable assurance that the receivers would still contain sufficient inventory for three starts when the air receiver pressure is as low as 215 psig.

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

The start and stop setpoints of the DC compressor are 220 and 245 psig respectively. However, the surveillance data indicates that the DC compressor started at a pressure as low as 215 psig.

The current statement in the UFSAR also implies that the two air compressors are started if the pressure in the receivers falls to 225 psig. This is misleading in that the AC compressor is preferred and cycles as necessary to maintain the air receiver pressure at 225 to 250 psig. The DC compressor is designed to be the backup air compressor and will automatically start upon failure of the AC compressor and is set to maintain the receiver pressure at 220 to 250 psig.

The safety consequence is minimal since it was demonstrated, through the preoperational test, that at least two EDG starts had been available by the EDG air start system. Meanwhile, the safety analysis assumes that given one unsuccessful EDG start, the gas turbine is relied upon for accident mitigation.

IV. Corrective Action

As a result of the event described in this LER and the subsequent investigation, the following corrective action is required:

1) The design basis of the EDG air start system will be established and it will be ensured that it is met. This will be completed prior to declaring the EDG operable.

2) The UFSAR and surveillance procedures will be revised as necessary prior to Cycle 16.

3) A review of other systems to identify and resolve design basis discrepancies is ongoing as part of the design basis verification program to address 10 CFR 50.54(f) concerns. The 10 CFR 50.54(f) review and recommendation implementation will be completed before startup for Cycle 16.

V. Additional Information

Similar Events

Review of LERs has revealed no similar design control events involving the EDG air start system in the last two years.

Manufacturer Data

None.