



Northeast
Nuclear Energy

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The Northeast Utilities System

Donald B. Miller Jr.,
Senior Vice President - Millstone

Re: 10CFR50.73(a)(2)(ii)

May 27, 1994
MP-94-367

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 94-011-00

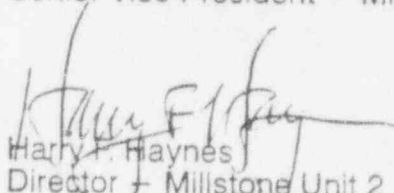
Gentlemen:

This letter forwards Licensee Event Report 94-011-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(ii).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Donald B. Miller, Jr.
Senior Vice President - Millstone Station

BY: 
Harry F. Haynes,
Director - Millstone Unit 2

HFH/SLS:clc

Attachment: LER 94-011-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2

Handwritten initials/signature

9406030034 940527
PDR ADDCK 05000336
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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB) 7714, 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.

FACILITY NAME (1) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 05000336	PAGE (3) 1 OF 6
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TITLE (4)
"B" Emergency Diesel Generator Deficiencies During 18 Month Inspection

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 NAME	DOCKET NUMBER
04	27	94	94	011	00	05	27	94		05000
									FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	<input type="checkbox"/> 20.402(f)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
POWER LEVEL (10)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(f)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	(Specify in Abstract below and in Text, NRC Form 366A.)						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(g)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(h)	<input type="checkbox"/> 50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Philip J. Lutz, Site Licensing	TELEPHONE NUMBER (include Area Code) (203) 447-1791 Ext. 6585
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES <small>(If yes, complete EXPECTED SUBMISSION DATE)</small>	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewriter lines) (16)

On April 28, 1994 at approximately 1200 hours, with the plant in Mode 5, Reactor Coolant System (RCS) temperature of 110 degrees Fahrenheit and approximately 20 psig, a review of the cumulative problems discovered on the 'B' Diesel Generator (DG) was performed. A conservative conclusion, though not supported by actual engine performance, was that the DG may not have been capable of meeting its action mitigation requirements. A 10CFR50.72 report was conservatively made. This 50.73 report has not resulted in any evidence to support the fact that the DG would not have been able to respond when required but provides the details of the problems discovered during the engine overhaul.

There were no safety implications as a result of this event. Prior to the shutdown, the engine performed satisfactorily with no indications of any problems and there is no evidence that the engine would not have continued to perform properly.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

EXPIRES: 5/31/95

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

I. Description of Event

On April 25, 1994 with the plant in Mode 5, cold shutdown, for a repair to a reactor coolant pump seal, an 18 month inspection/preventive maintenance on the 'B' Diesel Generator (DG) was in process. During a "water test" of the DG jacket water cooling system, leaks were reported at the #3, #10, and #11 cylinder liners. A decision was made to replace these liners with new liners. During the disassembly process to replace the liners, it was noted the upper crankshaft main bearings showed indications of some previous flashing or metal smearing. Additionally, the upper air start distributor drive shaft and the overspeed governor shaft were deformed. An inspection of the blower revealed that the lobe clearances did not appear to be within the vendor recommended limits. On April 28, 1994, at approximately 1200 hours, a review of the cumulative problems discovered on the 'B' DG was performed. A conservative conclusion, though not supported by actual engine performance, was that the DG may not have been capable of meeting its action mitigation requirements. A 10CFR50.72 report was conservatively made. This 50.73 report has not resulted in any evidence to support the fact that the DG would not have been able to respond when required but provides the details of the problems discovered during the engine overhaul. Since the DG was out of service for this inspection, there were no required operator actions. Additionally, there were no automatic or manually initiated safety systems actuated during this event.

II. Cause of Event

1) Cylinder Liner Leakage

The root cause of the liner leakage during the water test has been determined to be the natural end of life for the "O" ring joint. The cylinder liners are original equipment and were scheduled for replacement during the end of Cycle 13 refuel outage. The water test performed during this inspection was different than past tests and may have contributed to the earlier than expected leakage. Past water tests were performed at 30 psig for a 24 hour period. The water test performed at this inspection, was performed at 50 psig for a 10 minute period (vendor recommendation). The higher pressure could have contributed to the leakage rate. During engine operation the liner area becomes warmer than during the water test. The warmer temperature may tend to close up the leakage path during loaded engine conditions. The location and amount of leakage would not have hindered the ability of the diesel to perform its safety function. The leakage was from the lower "O" ring joint (see Figure 1) into the exhaust manifold area. Any water leakage would be exhausted through the muffler into the atmosphere. The leakage rate was small enough such that it was within the capability of the make-up system.

2) Upper Crankshaft Main Bearing Damage

The suspected cause of the main bearing damage is a dry system start performed on April 21, 1993. The 'B' DG had been taken out of service for maintenance. This maintenance required the lube oil system to be isolated and drained. Following the maintenance and prior to engine startup, it is standard procedure for Operations and Maintenance to fill and vent the lube oil system. This was not adequately performed. The engine was pre-lubricated for 3 minutes and fast started to satisfy its surveillance test following maintenance. The mechanic on station notified the Control Room that the engine lube oil system had not been properly vented and the engine was secured one minute after start up. An inspection of the bearing gaps following the start up through the access covers did not reveal any abnormal conditions. The lube oil system was filled and vented and the engine started and operated normally throughout its 2 hour surveillance run. A comparison of engine temperatures and pressures before and following this event did not reveal any anomalies. At this time, it is surmised the bearing inspection immediately following the incident did not reveal any large clearances because the engine was still warm from the incident and the clearances were small (within specification) due to the elevated temperature.

3) Air Start Distributor Drive Shaft and Overspeed Governor Shaft Deformation (See Figure 2)

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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

The cause of the shaft deformation is due to either over-torquing of the air start distributor cam nut during initial installation or a misalignment of the air start distributor drive shaft with the overspeed governor shaft. This misalignment can occur anytime the timing cover is removed from the engine since the air start distributor assembly is mounted to the cover.

4) Blower Clearances Not Within Specification

The root cause of the out of specification clearances is original manufacture. The clearances were out of specification when the blower was manufactured and accepted at the time of replacement during a past overhaul. The previous data was reviewed and compared to the present clearances. The clearances were essentially unchanged since installation and were therefore determined by the vendor to be acceptable.

III. Analysis of Event

This report is conservatively submitted pursuant to 10CFR paragraph 50.73(a)(2)(ii), any event that could have resulted in the condition of the nuclear power plant being seriously degraded.

There were no safety consequences as a result of this event since there is no evidence that the engine would not have been able to perform its required functions. The plant was in a mode that required only one emergency diesel generator to be operable. During the previous time period, the unit complied with the Technical Specifications. The event is being conservatively reported. It was postulated the combination of all the incidents could have contributed to the diesel generator becoming inoperable during reactor operation. However, a review of the problems with the lead vendor technical representative indicates the diesel generator would have been capable of performing its safety function, i.e., provide emergency power for a 7 day period. This is based on the fact that the diesel engine operational parameters showed no signs of diminishing performance and the diesel generator had successfully completed its surveillance runs during the past year.

IV. Corrective Action

- 1) Three cylinder liners were replaced. During a subsequent water test another original liner began leaking. At this time, a decision was made to replace all the cylinder liners. Nine additional liners were procured and installed. A subsequent retest proved satisfactory.
- 2) The upper crankshaft journals were acid washed to remove any smeared aluminum then lapped. All the upper crankshaft and rod bearings were replaced.
- 3) The overspeed governor shaft was replaced and the upper air start distributor was reworked to remove any raised metal from the deformed area and dye penetrant inspected to verify no relevant indications, and accepted for use.
- 4) The blower clearances have not changed significantly since installation and were accepted as is. The clearances will be reinspected during the next refuel outage and re-evaluated.
- 5) The diesel was started, run, and inspected in accordance with vendor recommendations for wear-in following overhaul. When this testing was completed, a successful operability run was performed to satisfy Technical Specification requirements.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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

V. Additional Information

There were no failed components associated with this event.

Similar Events: None.

EIIS Codes:
Emergency Diesel Generator EK
Manufacturer: COLTEC Industries C470
Fairbanks Morse Engine Division
Model 38D Series 8-1/8x10 OP

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)

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TEXT (If more space is required, use additional copies of NRC Form 365A) (17)

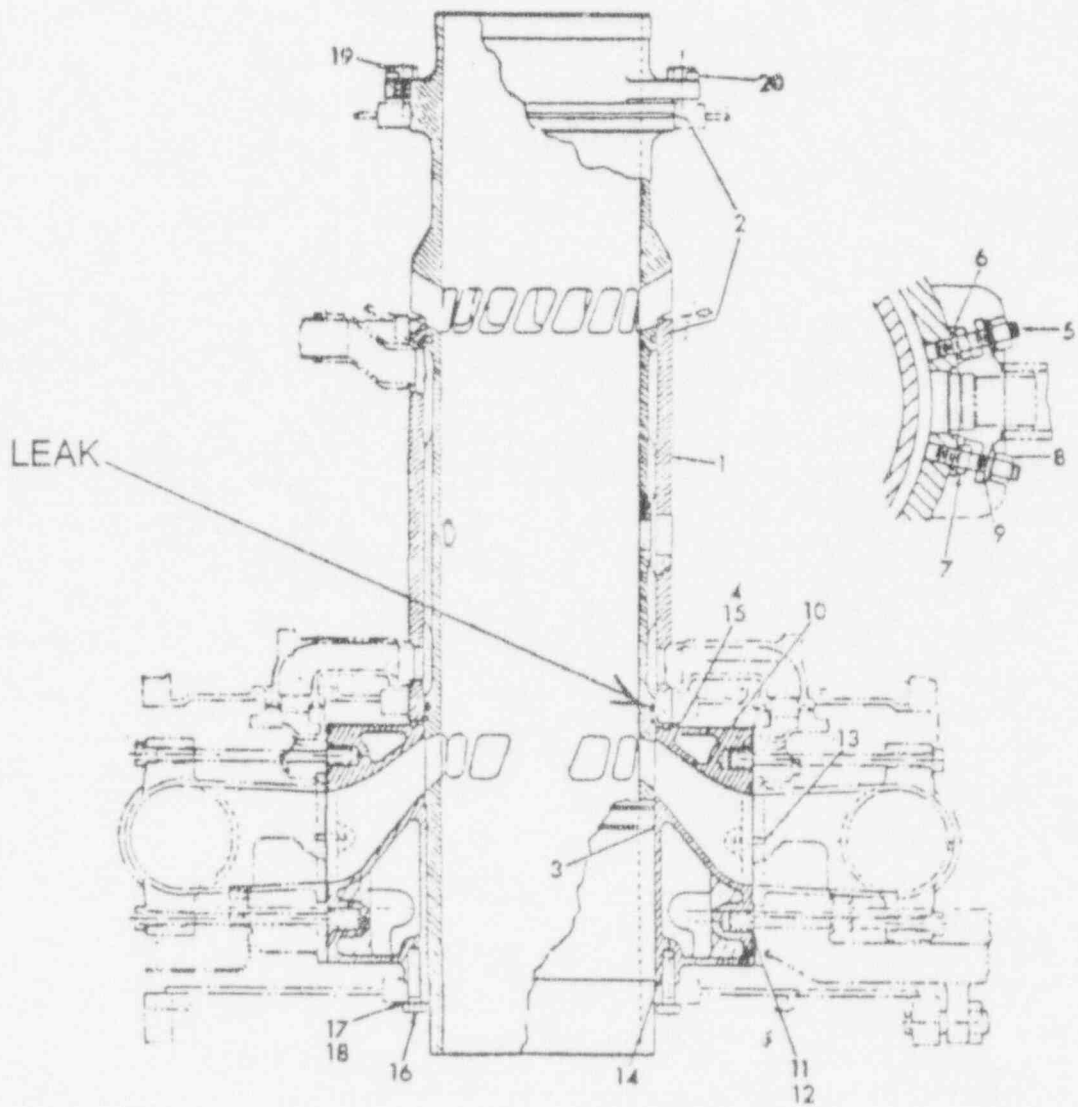


Figure 1
Cylinder Liner Assembly

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 05000336	LER NUMBER (5)			PAGE (3) 06 OF 6
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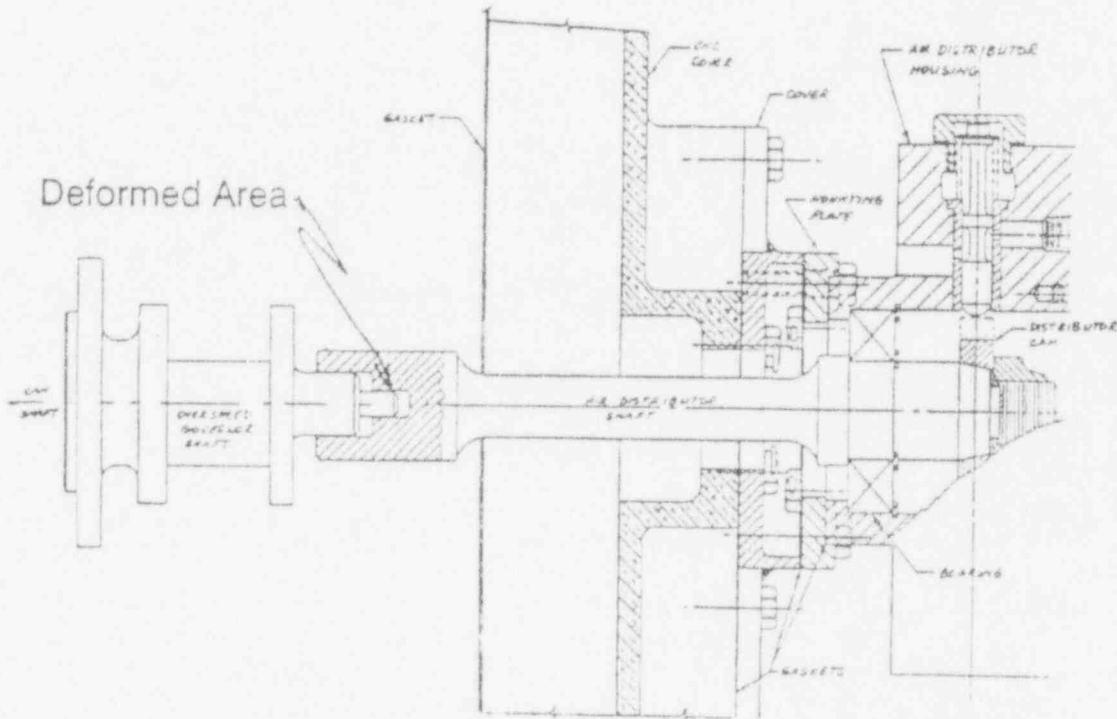


Figure 2
Airstart Distributor Shaft and Overspeed Governor Shaft Deformation