

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 (MNBB 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)
Indian Point 3

DOCKET NUMBER (2)
05000286

PAGE (3)
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TITLE (4) Two Emergency Diesel Generators Inoperable During Refueling as a Result of the Loss of a Diesel's Room Ventilation During Maintenance on Another Diesel; A Condition Prohibited By Technical Specifications

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
8	1	97	97	-- 015 --	00	08	29	97	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)	00	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		
		20.405(a)(1)(iii)		✓ 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)		
		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
Jeff Fleischmann, Engineer, System Engineering

TELEPHONE NUMBER (Include Area Code)
(914) 736-8687

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
X	VJ	FAN	I062	YES						

SUPPLEMENTAL REPORT EXPECTED (14)

YES
(If yes, complete EXPECTED SUBMISSION DATE).

✓ NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On August 1, 1997, at approximately 1005 hours, with the plant in a refueling condition and no core alterations in progress, Operations declared the 31 Emergency Diesel Generator (EDG) inoperable after the NRC resident inspector observed the 31 EDG Building ventilation damper open but no fan operating. An investigation discovered the 314 exhaust fan motor operating, the fan inoperable, and the ventilation damper for fan 314 open (the exhaust damper is interlocked with its fan motor). The redundant EDG 31 ventilation fan 315 was made inoperable by this failure mode because the flow path would be short circuited (fan 315 would pull air through damper 314 rather than through the EDG room). The plant was in a condition prohibited by Technical Specification 3.7 (EDG 32 was out of service for maintenance making 2 EDGs inoperable) from 1005 hours until ventilation was restored at about 1015 hours. The preliminary cause of the failure is a gap between fan shaft and it's bearing. Corrective actions included closure of the damper for fan 314, a preliminary equipment failure evaluation (EFE) by Maintenance identified upgrades to the installation procedure which were completed, fan 314 repairs, the other fans were disassembled and inspected, an EFE will be completed. Further corrective actions will be performed as necessary. A supplemental LER will be issued if the results of the EFE differ significantly. This event had no effect on the health and safety of the public.

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TEXT CONTINUATION

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

Note: The Energy Industry Identification System Codes are identified within the brackets { }

DESCRIPTION OF EVENT

On August 1, 1997, at approximately 1005 hours, Operations concluded that the 31 Emergency Diesel Generator (EDG) {EK} was inoperable because its room ventilation system (VJ) was not operable. EDG 31 was inoperable based on engineering judgment after discovering that room ventilation fan 314 {FAN} had failed (the fan drive motor was running but the fan was not) and its exhaust damper was open (the exhaust damper is interlocked with the fan motor). Because the EDG room exhaust fans are adjacent to each other, the redundant ventilation exhaust fan (315) for EDG 31 would preferentially draw air from its adjacent open damper {DMP} for fan 314 and not from the EDG room ventilation intake louver {LV}. When EDG 31 was declared inoperable 32 EDG was already inoperable for scheduled maintenance resulting in a condition prohibited by Technical Specification 3.7.F.4. Technical Specification 3.7.F.4 requires that under all conditions, including cold shutdown, a minimum of two EDGs be operable at all times. Immediate corrective action was taken by de-energizing the power supply for fan 314 resulting in closure of the exhaust damper for fan 314. Following closure of the damper EDG 31 was declared operable at approximately 1015 hours.

At the time of the event, the reactor vessel head was removed, the Reactor Coolant System (RCS) was at atmospheric pressure, the average RCS temperature was approximately 115 degrees F, the core reload had been completed, the reactor cavity was filled to approximately 93 feet 3 inches, and EDG 32 had been declared inoperable to perform scheduled maintenance.

System Engineering (SE) investigated the event and discovered the drive motor for fan 314 running and its fan drive belts separated from its motor driven pulley. Further inspection identified that the fan shaft had moved axially. SE observed no apparent damage to the fan or fan housing, and the fan drive motor appeared to be operating properly. The failure has been preliminarily evaluated in order to determine any similarity with two previous failures in 1996. The equipment failure analyses for those failures found the first failure was due to fan blades contacting the fan screen and the second due to loose locking screws/shaft condition and rotation of the shaft within the inner ring in one of the two roller bearings.

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Maintenance performed a preliminary EFE and identified potential causes. These causes were considered by the independent expert who performed the previous two EFES and a preliminary conclusion is that the failure was due to vibration caused by a gap between fan shaft and its bearing. The preliminary conclusions are under review at this time. The fans for the EDG room ventilation system are included in the Maintenance Rule Program. The fan is model number 032-048-6263, manufactured by Industrial Air Inc. {I062}

CAUSE OF EVENT

The event was caused by a failure of the EDG 31 room ventilation exhaust fan 314. The preliminary cause of the failure is a gap between fan shaft and its bearing.

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed to address the causes of this event:

- EDG 31 room exhaust fan 314 was secured and its damper closed.
- A preliminary EFE by Maintenance identified the need to upgrade the installation procedure to provide additional guidance (e.g., torque values, direction of bearing collar installation). The procedure has been upgraded.
- Fan 314 was inspected and repaired using the revised procedure. It has been tested, and returned to service. A chip was found in a fan bearing during the inspection.
- The other EDG exhaust fans were disassembled, inspected and reassembled using the revised procedure. The review found a chip in a fan 316 bearing similar to one on the fan 314 bearing.
- The Equipment Failure Evaluation (EFE) will be completed and corrective actions taken as necessary. The scheduled completion date for this EFE is October 15, 1997.
- A supplemental LER will be provided to report the results of the EFE if they differ significantly from the preliminary conclusions. The LER supplement, if needed, is scheduled to be provided by November 15, 1997.

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ANALYSIS OF EVENT

The condition is being reported under 10 CFR 50.73 (a)(2)(i)(B). The licensee shall report any operation or condition prohibited by the plant's Technical Specifications. The condition is being reported because Technical Specifications 3.7.F.4 requires that under all conditions, including cold shutdown, a minimum of two EDGs be operable at all times. Only one EDG was operable when EDG 31 was declared inoperable at 1005 hours with EDG 32 already inoperable for planned maintenance until EDG 31 was declared operable about 1015 hours. Fan 314 could have failed between July 16, 1997 (tested using 3PT-M79A) and the time it was declared inoperable on August 1, 1997.

A review of Licensee Event Reports (LERs) over the last two years for similar events where failures of EDG support systems resulted in inoperable EDGs identified the following LERs: LER 96-011-00, 95-15-03, 95-007-00.

SAFETY SIGNIFICANCE

This event did not have a significant effect on the health and safety of the public. There was no actual safety significance because the EDG room temperature did not exceed design limits and there was no loss of offsite power or accident requiring the EDGs to operate.

There was no potential safety significance for design basis conditions. If the event occurred during shutdown, one EDG would be adequate to power core cooling equipment and spent fuel pool cooling. If the plant was in operation, the removal of one of the three EDGs for maintenance would be limited by entry into the Technical Specification Limiting Condition for Operation (LCO). The LCO basis assumes no single failure occurs during the limited unavailability of equipment. The design does not postulate a simultaneous failure of an EDG exhaust fan, entry into an LCO for another EDG, and an event which requires the EDGs to function.

Also, operators would have been alerted to the inoperable room ventilation condition prior to exceeding the design temperature with existing temperature alarms. The inoperable exhaust fan could have been de-energized and its associated exhaust damper closed thereby restoring room cooling with the room's redundant exhaust fan.