

Nuclear Power Plant  
P.O. Box 215  
Buchanan, New York 10511  
914 736.8001



**New York Power  
Authority**

**Robert J. Barrett**  
Plant Manager

July 17, 1996  
IPN-96-075

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

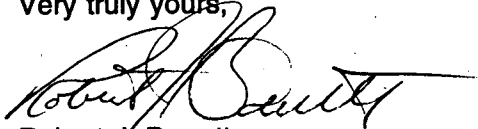
SUBJECT: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
License No. DPR-64  
Licensee Event Report # 96-011-00  
**Two Safety Injection Pumps Declared Inoperable Due to  
Equipment Failures Above 350 Degrees Fahrenheit, A Condition  
Prohibited by Technical Specifications.**

Dear Sir:

The attached Licensee Event Report (LER) 96-011-00 is hereby submitted as required by 10 CFR 50.73. This event is of the type defined in 10 CFR 50.73 (a)(2)(i)(B).

Also, attached is the commitment made by the Authority in this LER.

Very truly yours,

  
Robert J. Barrett  
Plant Manager  
Indian Point 3 Nuclear Power Plant

Attachment

cc: See next page

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Docket No. 50-286

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cc: Mr. Thomas T. Martin  
Regional Administrator  
Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406-1415

INPO Record Center  
700 Galleria Parkway  
Atlanta, Georgia 30339-5957

U.S. Nuclear Regulatory Commission  
Resident Inspectors' Office  
Indian Point 3 Nuclear Power Plant

COMMITMENT LIST

Number	Commitment	Due
IPN-96-075-01	A supplemental LER will be forwarded to the NRC if the fan failure mechanisms are found to be significantly different from those determined by the preliminary assessment. This supplement, if necessary, will be submitted within 30 days of accepting the evaluation analysis.	Within 30 days of accepting the evaluation analysis.

## 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 3DOCKET NUMBER (2)  
05000286

TITLE (4) Two Safety Injection Pumps Declared Inoperable Due to Equipment Failures Above 350 Degrees Fahrenheit, 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
06	17	96	96	-- 011 --	00	07	17	96	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		99	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  
Jorge L. Rodriguez, Senior Licensing EngineerTELEPHONE NUMBER (Include Area Code)  
(914) 736-8882

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	VJ	FAN	I062	YES						

YES  
(If yes, complete EXPECTED SUBMISSION DATE).

X NO

EXPECTED  
SUBMISSION  
DATE (15)

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

On June 17, 1996, at approximately 1249 hours, with the plant at 99 percent power and normal temperature and pressure, a System Engineer on a routine system walkdown discovered the wire mesh safety screen for exhaust fan 314 of the Emergency Diesel Generator's (EDG) impinging on the fan hub. This condition was considered to not render Emergency Diesel Generator 31 inoperable. At approximately 1319 hours, Engineering notified the Shift Manager (SM) that a second inspection of exhaust fan 314 discovered the mounting bolts for the fan assembly were sheared and or missing and a metal ring on the fan shaft, believed to be part of the pillow block, was hanging loose. Engineering then initiated a Deviation Event Report. The SM declared EDG 31 inoperable at 1347 hours. SI Pump 32 was also considered inoperable because EDG 31 provides emergency power to SI Pump 32. During this time, Safety Injection Pump (SI) 33 was inoperable due to corrective maintenance. Two SI Pumps inoperable above 350 degrees F is a condition prohibited by Technical Specification 3.3.A.3 and 3.3.A.4. At 1347 hours, Operations commenced preparation for a plant shutdown. At 1356 hours, the shutdown preparation was terminated when SI Pump 33 was declared operable. The cause of the failed fan components is still under investigation. Preliminary review suggests the following possible causes: a combination of possible shaft misalignment coupled with vibration or vibration induced safety screen weld failure impinging the screen on the fan hub or locking collar backing off. Corrective actions included replacement of damaged components and inspection of all Diesel Generator Fans.

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

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

**DESCRIPTION OF EVENT**

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

On June 17, 1996, at approximately 1238 hours, with the plant at 99 percent power and normal temperature and pressure, a System Engineer entered the Emergency Diesel Generator's (EDG) {EK} room on a routine EDG room ventilation system {VJ} walkdown. An exhaust fan {FAN} was running because negative pressure was present during entry. The Engineer heard the fan shutting-off / winding down. He checked the fan temperature control panel and observed the temperature to be 90 degrees F, therefore, fan 314 was maintaining normal temperature. He went to do routine inspection and found the wire mesh safety screen for fan 314 impinging on the fan hub. He went to the Shift Manager's office and advised him that the tack welds holding the screen to fan assembly had broken loose, but he did not consider the fan to be inoperable. He then went to write a Problem Identification (PID) for this condition and while turning it in to work control, he informed a maintenance supervisor of the condition and they both went to see what the work would involve. At approximately 1319 hours, Engineering notified the Shift Manager (SM) that a second inspection of exhaust fan 314 discovered the mounting bolts for the fan assembly were sheared and or missing; and a metal ring on the fan shaft, believed to be part of the pillow block, was hanging loose. Visual inspection of the other 5 fans showed no indication of this condition. The motor driven fan is manufactured by Industrial Air Inc. {I062} and the model number is 032-048-6263. The Engineer subsequently initiated a Deviation Event Report (DER-1448). The SM investigated the reported problem and then at 1347 hours declared EDG 31 inoperable in accordance with SOP-RPC-8. During this time Safety Injection Pump (SI) 33 was inoperable due to corrective maintenance.

**LICENSEE EVENT REPORT (LER)**  
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Technical Specification 3.3.A.3.e requires three SI Pumps to be operable when the Reactor Coolant System average temperature is above 350 degrees F, and 3.3.A.4b allows one SI Pump to be out of service for 24 hours. Technical Specification 3.7.G does not require a component to be considered inoperable solely because its power supply is inoperable provided its corresponding normal or emergency power source is operable and all of its redundant systems, subsystems, trains, components and devices are operable or likewise satisfy the requirements of the specification. However, because one of the redundant pumps for the SI 32 Pump was inoperable for corrective maintenance (SI Pump 33), SI Pump 32 was considered inoperable. Two SI Pumps inoperable above 350 degrees F is a condition prohibited by Technical Specification 3.3.A.3 and 3.3.A.4. At approximately 1347 hours, Operations commenced preparation for a shutdown while SI Pump 33 was retested and returned to service. SI Pump 33 was declared operable at 1356 hours and the shutdown terminated at that time. Therefore, the period of time that two SI pumps were declared in an inoperable condition by Operations was approximately 9 minutes. At the time of the event, reactor power was at 99 percent, reactor coolant temperature and pressure was at approximately 567 degrees F and 2235 psig respectively, and pressurizer level was at 46 percent.

Further inspection for the Diesel Generator Exhaust Fan 314 discovered that the locking collar on the fan bearing apparently backed off, which allowed axial movement of the fan shaft, resulting in damage to the shaft. Engineering performed an extent of condition inspection of the remaining five EDG room ventilation exhaust fans. The results of this inspection confirmed a similar condition did not exist with the other fans.

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As described in Licensee Event Report 95-015-01, the reason EDG 31 was declared inoperable is the potential lack of EDG room ventilation during a DBA resulting from the design of emergency power supply for the redundant fan. The EDG Building Heating and Ventilation System design provides redundant room exhaust fans using two 100% capacity ventilation exhaust fans and one intake louver (LV) for each EDG room. The original station design provided emergency power for essential equipment from two 480 Volt AC Motor Control Centers (MCCs) (ED). At that time, the only sources of emergency power available were MCCs 36A and 36B. The current station design includes MCC 36C also. Because only two emergency power MCCs were available originally to supply power to three EDG rooms, providing only one 100% fan in each room would not satisfy single failure criteria. Therefore, the original design included two redundant 100% fans in each EDG cell with one powered from MCC 36A and the other powered from MCC 36B. This design would satisfy the single failure criteria if it is assumed that the plant would always have either MCC 36A or MCC 36B operable. Each EDG cell would have power to at least one exhaust fan as required. See the following matrix of power assignment.

**Matrix of Electric Power Assignments for EDGs and Room Exhaust Fans**

SI Pump	EDG No.	Room Exhaust Fan No.	Power Source
32	31	314	MCC 36A(EDG 33)
		315	MCC 36B(EDG 32)
33	32	316	MCC 36A(EDG 33)
		317	MCC 36B(EDG 32)
31	33	318	MCC 36A(EDG 33)
		319	MCC 36B(EDG 32)

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**CAUSE OF EVENT**

The exact failure mechanism of the fan is still under investigation. Preliminary review suggests the following possible causes:

- a combination of possible shaft misalignment coupled with vibration or
- vibration induced safety screen weld failure impinging the screen on the fan hub or
- the locking collar on the fan bearing backing off.

A supplemental LER will be forwarded to the NRC if the fan failure mechanisms are found to be significantly different from those determined by the preliminary assessment. This supplement, if necessary, will be submitted within 30 days of accepting the evaluation analysis.

**CORRECTIVE ACTIONS**

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

- The Diesel Generator Exhaust Fan 314 was inspected and the fan shaft and bearing were replaced, the screen to the motor/fan base plate was tack welded, and the failed bolting on the fan housing were replaced.
- The Diesel Generator Exhaust Fan 314 shaft, bearing and housing and bolts were sent out for analysis.
- The other five (5) Diesel Generator Exhaust Fans were inspected and confirmed to be operable.



**LICENSEE EVENT REPORT (LER)**  
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**ANALYSIS OF EVENT**

The event is reportable under 10 CFR 50.73 (a) (2) (i) (B). The licensee shall report any operation or condition prohibited by the plant's Technical Specifications. When EDG 31 was declared inoperable, SI Pump 32 was also considered inoperable because EDG 31 provides emergency power to SI Pump 32. During this time, Safety Injection Pump (SI) 33 was inoperable due to corrective maintenance. Two SI Pumps inoperable above 350 degrees F is a condition prohibited by Technical Specification 3.3.A. Technical Specification 3.3.A.3.e requires three SI Pumps to be operable when the Reactor Coolant System average temperature is above 350 degrees F, but allows one SI Pump to be out of service for 24 hours. Therefore, based on review of this event the total time that the plant was in a condition prohibited by Technical Specifications was approximately 37 minutes which includes an estimated time of 28 minutes based on System Engineer identification of the degraded condition (at approximately 1319 hours) prior to Operations declaring the second SI pump inoperable (at 1347 hours).

There are no similar events for SI pumps. However, similar events have been reported in previous Licensee Event Reports (LERs) related to EDG ventilation system impact on EDG operability. Events related to EDG ventilation systems that effected EDG operability have been reported in LER 95-015-01, 95-004, and 94-010. Events regarding ventilation systems that impacted the operability of Engineered Safety Features (ESF) systems, excluding the EDGs, were reported in LERs 95-003, 94-009, 94-006 and 93-048.

**SAFETY SIGNIFICANCE**

This event did not have a significant effect on the health and safety of the public.

**LICENSEE EVENT REPORT (LER)**  
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There was minimal safety significance because the condition was immediately recognized and the actions required by the Technical Specification were being implemented. In addition, the 138 Kv and the 13.8 Kv sources of offsite power were available and the other two EDGs were operable when the EDG 31 was declared inoperable. Although EDG 31 was declared inoperable based on engineering judgement it was still available to perform its design function because it maintained its normal lineup. In the same way SI Pump 32 was available to perform its design function.

Based on engineering judgement SI Pump 33 was also available to perform its design function, as corrective maintenance had been completed and the pump restored to its normal configuration with control switch placed in "auto" approximately 3 hours and 27 minutes prior to discovery of the EDG fan 314 condition. During a test for operability, the pump was run using the normal monthly surveillance test which contained provisions for maintaining the proper system alignment. Hence, had a safety injection signal been generated at any time following post maintenance restoration of SI Pump 33, engineering judgement leads us to the conclusion that this pump would have performed its intended function in its intended manner.