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December 24, 1998

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 98-19-00

Document Control Desk
US Nuclear Regulatory Commission
Mail Station PI-137
Washington, DC 20555

The attached Licensee Event Report 98-19 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,

A. Alan Blind

Attachment

cc: Mr. Hubert J. Miller
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Jefferey Harold, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
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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 mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Indian Point Unit No. 2

DOCKET NUMBER (2)

50-247

PAGE (3)

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TITLE (4)

21 Emergency Diesel Generator Failure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIA L NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	24 ⁹	98	98	-- 1	-- 00	12	29	98		05000
										05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)				
POWER LEVEL (10)	99	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)	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)	X 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)
Philip Griffith, Sr. Licensing Engineer	(914)734-5190

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	DC	PSF	A152	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE). X NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On November 29, 1998, with the unit operating at 99% power, surveillance test PT-M21 "Emergency Diesel Generators" was being performed. After 20 minutes of operation under load, the fuel injection line to number eight cylinder of Emergency Diesel Generator (EDG) No. 21 began to leak. EDG 21 was manually unloaded and the engine shutdown. Approximately one gallon of fuel oil leaked, was contained, and subsequently cleaned up.

Based on the EDG 21 failure to meet the testing requirements in Technical Specification 4.6.A.1, the EDG was declared inoperable and entry into Limiting Condition for Operation (LCO) 3.7.B.1.a (a seven day LCO) was made at 2245. On November 30, 1998, the fuel injection line was connected and torqued to number eight cylinder and EDG 21 declared operable.

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

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Emergency Diesel Generator Surveillance Failure

EVENT DATE:

November 29, 1998

REPORT DUE DATE:

December 29, 1998

REFERENCES:

Indian Point 2 Condition Reporting System (CRS) No. 199810267 and 199810374

PAST SIMILAR OCCURRENCES:

None

DESCRIPTION OF OCCURRENCE:

On November 29, 1998 surveillance test PT-M21 "Emergency Diesel Generators" was in progress. After 20 minutes of operation under load, the fuel injection line to number eight cylinder of Emergency Diesel Generator (EDG) No. 21 began to leak. EDG 21 was manually unloaded and shutdown.

EDG 21 was started for the surveillance test using the station "Black Start" method provided in PT-M21. This requires the simulation of a loss of offsite power to the EDG start logic by activating the under voltage (UV) relays for 480 VAC bus 5A or 6A. For this test UV relays 27-52X2 and 27-53X2 were actuated to simulate an under voltage condition on 480 VAC bus 5A. When the relays were actuated, at 2149, an auto start signal started all three EDGs as designed. EDG 23 was shutdown at 2205 and EDG 22 was shutdown at 2214 as required by PT-M21. The load test was subsequently commenced on EDG 21.

At 2225, EDG 21 was initially loaded from 480 VAC bus 5A and by 2230 was at maximum normal running load of 1750 Kilowatts. Upon establishing maximum normal running load all EDG 21 mechanical and electrical parameters were checked as required by PT-M21 and found to be in the normal range. At this time the one hour full load test was initiated.

At 2245 while performing the PT-M21 required mechanical checks and inspections during the full load test, a fuel oil leak from the fuel oil injection line to number eight cylinder was noted. The fuel line from the cylinder connects to a compression fitting (known as a Banjo) which then connects the fuel injection line to the fuel manifold. The leakage occurred at the fuel line connection to the Banjo compression fitting.

EDG 21 was unloaded and shutdown after the fuel leak was identified. The total volume of fuel oil leakage was approximately one gallon. All leaked fuel oil was contained and subsequently cleaned up from the EDG building with no environmental release. EDG 21 was declared inoperable based on the failure to successfully complete the one hour full load test as required by PT-M21. This placed the plant in a seven day Limiting Condition for Operation (LCO) per

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DESCRIPTION OF OCCURRENCE CONTINUED:

Technical Specification 3.7.B.1.a.

On November 30, 1998 the EDG 21 compression fitting for number eight cylinder was retorqued and verified leak free. The cap screws on all cylinders for all three EDGs were verified to be tight and leak free. Subsequently, EDG 21 was declared operable at 1657 and the seven day LCO was exited.

ANALYSIS OF OCCURRENCE:

The Banjo fitting is compressed using a 3/8" cap screw. Maintenance was last performed on the Banjo compression fitting was performed in September 1997 during the six year planned maintenance overhaul on the EDGs. This fitting was disassembled, worked and reassembled as required by Work Order 96-83334, which directed the work to be performed under maintenance procedure EDG-B-002-A, Revision 2; Emergency Diesel Generator (EDG)6 Year Preventative Maintenance. The fitting was reassembled following procedure step 8.11.33, which states "Install pipe connection between fuel pump and header, using a new gasket and washer. Tighten header and pump connection evenly." As a result of the fuel oil leak, the Fairbanks Morse company was contacted and indicated that the correct torque values for the 3/8" inlet to fuel oil header cap screw is 27 ft-lbs and for the inlet pump retaining screw is 125 ft-lbs.

An industry search for similar events indicated that the Salem Plant diesel engines had experienced similar problems associated with loosening of the 3/8" cap screws on two different occasions. The Salem staff indicated that they are modifying their Preventative Maintenance program to check the cap screw torque periodically and to revise their method of tightening these cap screws.

There is no history of leakage from Banjo/fuel line fittings at Indian Point Unit No. 2. The fitting had provided adequate service since it was reassembled 15 months earlier and has been tested successfully on a monthly basis during that time. There was no evidence of damage or excessive wear on the fitting or the cap screws. The cap screws were found backed out of their holes and in the cylinder head housing cover.

The cause of the fuel oil leakage experienced with cylinder number 8 Banjo compression fitting was the inadequate torque on the 3/8" cap screws. The vibration experienced over a period of 15 months of normal engine running relaxed the initial torque to a point where the Banjo compression fitting was no longer leak free with the fuel oil pressure associated with engine operation. The torque applied during the last six year planned maintenance overhaul was likely incorrect, since there was no torque specification provided for the 3/8" cap screw during reassembly of this component. The lack of a specified torque standard for the cap screws made the actual torque application subjective and in this case, inadequate to maintain the fitting leak free over the expected six years of engine operation between the maintenance overhauls.

ROOT CAUSE SUMMARY:

1. Torque on the cap screws of the Banjo/injector line for the 8L cylinder on EDG 21 was inadequate for the projected operating life between overhauls of the EDG.

The fitting failed to maintain a leak free condition after 15 months of an expected 72 months of service. There was no evidence of mechanical or physical damage to the cap screws, lock nuts or injection line of this assembly. The cap screws are located under a protective cover housing.

2. Maintenance EDG overhaul procedure EDG-B-002-A, revision 2 was incomplete in that it did not provide proper torque values for the Banjo/injector line assembly.

The procedure states "Install pipe connection between fuel pump and header, using a new gasket and washer. Tighten header and pump connection evenly." The procedure does not provide a torque value

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ROOT CAUSE SUMMARY (continued):

for the cap screw.

CORRECTIVE ACTION:

1. Tightened the 3/8" cap screws on the Banjo compression fitting for the 8L cylinder on EDG 21. Additionally, verified tightness and leak free for 3/8" cap screws on all other cylinders for all EDGs.
2. Maintenance procedure EDG-B-002-A, Emergency Diesel Generator (EDG)6 Year Preventative Maintenance is scheduled to be revised by February 10, 1999, to include the torque values for the Banjo/injection line cap screws.
3. The torque settings for the Banjo/injection line cap screws are scheduled to be verified correct by February 10, 1999, during the next scheduled monthly surveillance testing.