NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Indian Point Unit 3	0 5 0 0 0 2 8 6	1 OF 0 4

TITLE (4) Voluntary LER Detailing Emergency Diesel Generator No. 32 Test Failure Caused by Unit Parallel Relay Oxidation

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 NAMES	DOCKET NUMBER(S)
0 8	1 7	8 8	8 8	— 0 0 8	— 0 0	1 2	2 3 8 8			0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 0 0		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		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	TELEPHONE NUMBER
Roger Lauricella, Plant Engineer I	AREA CODE 9 1 4 — 7 3 6 — 8 0 4 8

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	
B	E K	D G	A 1 5 2	Y		B	E K	S P P	W 1 2 0	N	
B	E K	R L Y	G 0 8 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

This voluntary LER is written to provide additional information on the 32 Emergency Diesel Generator failure of August 17, 1988. On Wednesday, August 17, 1988, with the unit at 100 percent power, the No. 32 Emergency Diesel Generator (EDG) was declared inoperable for scheduled maintenance and a 72 hour Limiting Condition of Operations (LCO) was entered. At the completion of the maintenance work, Operations personnel attempted to return the diesel to service. Diesel operation was sporadic with load fluctuations occurring. The diesel tripped off line on an overcurrent condition. Subsequent starting attempts caused the diesel to trip on overspeed, and the diesel was considered inoperable. All other plant systems functioned satisfactory during and after this event. Subsequent investigations by plant and vendor personnel disclosed that dirty contacts caused by oxidation on the Unit Parallel Relay in the diesel paralleling circuit had caused a loss of governor droop control. This led to load fluctuations and failure of a surge suppressor in the diesel generator field circuitry. The surge suppressor was replaced, the Unit Parallel Relay contacts cleaned and diesel circuits and controls were tested. The diesel was returned to service on August 20, 1988. The plant exceeded the original LCO of 72 hours for the No. 32 EDG by 16 hours, but had earlier received an NRC Discretionary Enforcement ruling which allowed continued plant operation for an additional 96 hours. Corrective actions to preclude future problems of the UPR Relay have been taken.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

DESCRIPTION OF EVENT

On Wednesday, August 17, 1988 at 0549, with the unit at 100 percent power, the No.32 emergency diesel generator (EK)(DG)(A152)(ALCO Model No. 251E16MS) was removed from service for scheduled maintenance, and a 72 hour LCO was entered. At the completion of the maintenance work on Wednesday evening, Operations personnel attempted to return the diesel to service. The diesel was being run at 1750KW for approximately 20 minutes when load fluctuations began to occur. Load picked up to about 2000KW and could not be reduced using the electronic governor. Load then dropped to about 1500 KW and further to 1000KW. Suddenly load picked up again above 2000KW and the diesel generator tripped on an overcurrent condition. Three attempts were then made to restart the diesel but it continually tripped on overspeed protection.

Plant personnel started investigations on Thursday, August 18, 1988. A charred surge suppressor (EK)(SPP)(W120) (Westinghouse Model No. 5CA21FC-Selenium) was found in the voltage/exciter assembly manufactured by Basler Electric (B093). This surge suppressor was in the circuit associated with the generator field controls. A spare surge suppressor could not be located on site and late on Thursday arrangements were made to have new surge suppressors built and shipped to the site. A new surge suppressor was installed late Friday and the exciter circuits were verified to be operating correctly.

An investigation into the situation indicated a failure of the Unit Parallel Relay (UPR) (EK) (RLY) (G080) (Model No. CR120A2102-41) manufactured by General Electric, and its contactor. A check of the relay contacts found them to be dirty (oxidized), and having high contact resistance. The contacts were thoroughly cleaned and the relay returned to service. After the relay work was complete, the diesel was satisfactorily tested and returned to operation.

With knowledge that the 72 hour LCO would run out on Saturday morning, the 20th of August, a request was made of the NRC to exercise discretionary enforcement in the case of Technical Specification (TS) 3.7.B.1 regarding the No.32 diesel. An extension to the TS 3.7.B.1 action was granted by the NRC on Friday the 19th in the form of Discretionary Enforcement of the Technical Specification, allowing the plant to continue operating for an additional 96 hours. The extension was to expire at 0549 on August 24, 1988. Only 16 hours of the additional 96 were needed to restore the EDG to service.

CAUSE OF THE EVENT

The UPR failed to perform its required function because of high resistance caused by oxidation on contacts 11-12 of the relay. This high contact resistance caused the governor control system to lose droop control, thereby leading to the load variations and the eventual overcurrent trip.

The Unit Parallel Relay (UPR) is operated by the Unit-Parallel switch on the diesel control panel. The purpose of this switch is to change the mode of operation of the diesel load control. In unit operation the speed of the diesel is constant with varying loads; no load sensor is used to vary speed. In parallel operation, the load sensor is sensitive to changes in load and causes a change in the fuel supply to the diesel to maintain its proportional share of the load. In parallel operation as inductive load is increased the load regulation circuitry causes the output voltage to decrease or droop. If paralleled units or systems are operated without the benefit of droop control, the diesel, when compared to an infinite, outside source of fixed frequency, will either overload or shut down on overcurrent depending on whether the diesel speed is, respectively, above or below the source frequency.

It should be noted that the only time the Unit-Parallel switch is placed in parallel is for monthly surveillance testing and paralleling operations. The switch is normally left in the unit position to insure that proper regulation is maintained for all emergency starts. Thus, the faulty contact of the UPR relay is only used in the parallel mode of operation and had no affect on the ability of the diesel to respond normally in a blackout emergency start condition.

ANALYSIS OF EVENT

A relay failure caused one (of three) Emergency Diesel Generator to remain out of service past the existing Technical Specification Limiting Condition of Operation. Failure of the relay was due to high relay contact resistance caused by oxidation of the contacts. Justification for Discretionary Enforcement was provided to the NRC and an additional 96 hours was granted as a result. The plant in actuality ran past the original 72 hours by 16 hours in order to restore the EDG to service.

CORRECTIVE ACTION

On August 19, 1988 the NRC issued a verbal concurrence on the Discretionary Enforcement of Technical Specification (TS) 3.7.B.1 covering the No. 32 EDG. Plant personnel completed repair work on the diesel at 2210 hours on August 20, 1988 with satisfactory retests. The following corrective actions have been undertaken by the plant to assure probability of reoccurrence is diminished:

1. Contact integrity of the UPR relay verified in the #31 EDG (#33 EDG was completed on August 23, 1988).

2. Cleaning of the diesel generator control cabinets and inspecting of the relays at the next opportunity of sufficient duration (outage).

3. Periodically inspect the UPR Relay for oxidation and functionality.

SECURING FROM THE EVENT

The plant completed repair activities and retesting on August 20, 1988. The No. 32 EDG was returned to service and declared operable at 2210 hours on August 20, 1988 and the LCO was exited. No similar LERs have been reported. This LER is being provided to the NRC on a voluntary basis.

Indian Point 3
Nuclear Power Plant
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New York Power Authority

December 23, 1988
IP3-88-074
IP3-88-008

Docket No. 50-286
License No. DPR-64

Document Control Desk
Main Station PI-137
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

The attached Licensee Event Report LER 88-008-00 is hereby submitted in accordance with the requirements of 10CFR50.73. This event is of the type defined in the requirements for "other" per 10CFR50.73 and is submitted as a Voluntary LER.

Very truly yours,

William A. Josiger
Resident Manager
Indian Point Three Nuclear Power Plant

ED/rj
Attachment

cc: Mr. William Russell
Regional Administrator
Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

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