

Stephen B. Brant
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511
Telephone (914) 734-5340

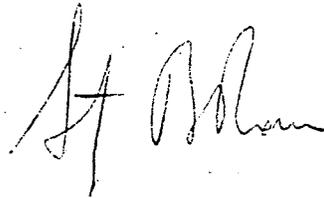
February 23, 1994

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 92-06-01

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached supplemental Licensee Event Report LER 92-06-01
is hereby submitted in accordance with the requirements of 10
CFR 50.73.

Very truly yours,



Attachment

cc: Mr. Thomas T. Martin
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Francis J. Williams, Jr., Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
Washington, DC 20555

Senior Resident Inspector
US Nuclear Regulatory Commission
PO Box 38
Buchanan, NY 10511

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Indian Point Unit No. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 4 7	PAGE (3) 1 OF 0 5
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TITLE (4)
Emergency Diesel Generator Fuel Oil Inventory Unavailable

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 3	2 3	9 2	9 2	0 0 6	0 1	0 2	2 3	9 4			0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											

OPERATING MODE (9) N	20.402(b)	20.405(c)	60.73(e)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 1 0 1 0	20.405(a)(1)(i)	60.38(c)(1)	60.73(e)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	60.38(c)(2)	60.73(e)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X 60.73(e)(2)(ii)	60.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	60.73(e)(2)(iii)	60.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	60.73(a)(2)(iii)	60.73(e)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Michael A. Whitney, Sr. Engineer	TELEPHONE NUMBER 9 1 4 7 3 4 - 5 1 3 1
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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

SUPPLEMENTAL REPORT EXPECTED (14) <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

SUPPLEMENTAL REPORT

On March 24, 1992, at approximately 0200 hours, with the unit operating at 100% power, the plant entered Technical Specification 3.0.1 because the availability of the requisite emergency diesel generator (EDG) fuel oil inventory could not be assured. Although the three tanks serving the EDGs had full fuel oil inventory, the ability to transfer fuel oil from one of the tanks was interrupted due to blown fuses in the power supply to the EDG No. 23 auxiliaries, including the fuel transfer pump. Later it was concluded that the entry into Technical Specification 3.0.1 in this situation was a conservative decision and was not necessary.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1) Indian Point Unit No. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 4 7	LER NUMBER (6)			PAGE (3)		
		YEAR 9 2	SEQUENTIAL NUMBER 0 0 6	REVISION NUMBER 0 1			

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

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Emergency Diesel Generator Fuel Oil Inventory Unavailable

EVENT DATE:

March 24, 1992

REPORT DATE:

February 22, 1994

REFERENCES:

Significant Occurrence Report (SOR) 92-159, 92-165

PAST SIMILAR OCCURRENCE:

LER 92-003, LER 92-006

DESCRIPTION OF OCCURRENCE:

On March 24, 1992 at 0125 hours, with the unit operating at 100% power, an operator conducting his rounds found that the pre-lubrication pump and jacket water heaters for Emergency Diesel Generator (EDG) No. 23 were not energized. Upon investigation the operator found that all three line fuses for the EDG No. 23 auxiliaries were blown. The EDG No. 23 support equipment that lost power because of these blown fuses included the starting air compressor, the fuel oil transfer pump, the pre-lubrication pump, the jacket water heaters, and the lubricating oil heaters.

An assessment performed in connection with a previous occurrence (LER 92-003) of this type had determined that the starting air compressor, the pre-lubrication pump, and the jacket water and lubricating oil heaters were not necessary for EDG operability. However, the loss of the fuel oil transfer pump made the fuel oil inventory in the associated storage tank technically unavailable. This condition precluded satisfaction of the full Technical Specification 3.7.A.5 requirement that 19,000 gallons of fuel oil be available for the EDGs. Therefore, at 0200 hours, the unit entered Technical Specification 3.0.1, pursuant to 10 CFR 50.72 and the condition was reported to the NRC using the NRC emergency notification system.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

DESCRIPTION OF OCCURRENCE: (Continued)

By 0310 hours, the fuses were replaced. Power was restored to the EDG No. 23 auxiliaries, and shortly thereafter the provisions of Technical Specification 3.0.1 were terminated.

ANALYSIS OF OCCURRENCE:

Entry into Technical Specification 3.0.1 occurs when plant conditions exceed the conditions permitted by the Technical Specifications. Technical Specification 3.7.A.5 requires an onsite supply of 19,000 gallons of fuel oil be available in the individual storage tanks for the three EDGs. Since the fuel oil transfer pump for the No. 23 EDG was out of service due to the loss of its power supply, it was concluded that its fuel supply volume, though present, was unavailable. Therefore, entry into Technical Specification 3.0.1 occurred and was reported to the NRC under 10 CFR 50.73(a)(2)(i)(B).

Following a previous similar occurrence (LER 92-003), a review of the original licensing basis for the EDG fuel oil inventory was conducted. This basis recognized and considered the unavailability of one of the EDG storage tanks. An amendment to the license is planned to clarify the Technical Specifications regarding EDG fuel inventory requirements.

Following this occurrence, an operability determination was developed since the Technical Specification is unclear regarding what declaration should be made if an EDG fuel oil transfer pump is out of service. The operability determination concluded that the declaration of an entry into Technical Specification 3.0.1 is not necessary for this condition. The actions determined to be appropriate were:

1. declare the associated EDG inoperable and enter into a 7 day LCO for the affected diesel for the duration of the fuel transfer pump outage,
2. assure that the available volume of fuel oil in the gas turbine tanks at the Buchanan Substation or onsite other than the normal supply tanks is at least 29,000 gallons, and
3. assure that the total available volume of fuel oil in the remaining two underground supply tanks for the EDGs is at least 12,680 gallons.

This operability determination was reviewed by the Station Nuclear Safety Committee.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		0 0 6 —	0 1	0 4	OF	0 5

TEXT (if more space is required, use additional NRC Form 366A's) (17)

CAUSE OF OCCURRENCE:

This condition resulted from the loss of power to the No. 23 EDG support equipment, which occurred when all three 40 Amp. in-line power supply fuses were blown. Since there was no obvious indication of the cause of the blown fuses a station effort was immediately initiated to determine the cause.

The three fuses were tested to determine whether they opened on overload, mechanical failure or direct short. The test results indicated that the fuses blew due to a direct short condition with a current in excess of 10 times the fuse rating.

An intensive investigation of the cabling and wiring of the system was conducted, including line current measurements, motor and wiring meggering, motor impedance testing, continuity checks, molded case circuit breaker trip testing, field wiring to print verification, and visual inspections of connections, wiring and conduit. No signs of damage were found and no abnormal findings were noted which would indicate a cause for the fuses blowing. Various scenarios were evaluated and none were found to be a credible cause. As a precautionary measure, line starters and contactors for the No. 23 EDG jacket water and lubricating coil heaters and pre-lubricating pump were replaced.

Based upon further review of this event, the fuse selection was determined to be appropriate. The full load functional test which was performed on March 23, 1992 was reviewed and determined not to be a cause of the blown fuse event. Based on an x-ray examination of the fuses, the probable range of overcurrents could have been anywhere between 160Amps to 750Amps. Fault current calculations revealed that either an arcing three phase fault with arc impedance ranging anywhere from 0.1 to 0.2 Ω or a single phase fault with an arc impedance of 0.5 Ω could have generated fault currents having the potential to open the fuses. A fuse/trip coil coordination analysis revealed two scenarios that had the potential for operating the fuses ahead of the respective breaker: 1) an arcing fault in the Lube Oil or Jacket Water Heater Circuits; or 2) fault currents at various points of cable termination at breaker terminals controlling the EDG 23 auxiliaries. However, since an inspection of the motors, cables, circuit breakers, and terminals revealed no charred marks indicating a fault had taken place, no probable cause for the fuse operation was established.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 2	- 0 0 6	- 0 1	0 5	OF 0 5

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

CAUSE OF OCCURRENCE: (continued)

A monitoring recorder was installed on the EDG No. 23 auxiliary circuits for about nine months to determine if this was a repeatable occurrence. The recorder was designed to detect and record any possible current spikes on each of the auxiliary circuits to pinpoint the exact location of any possible faulted condition. During the 1993 refueling outage a modification was installed on EDG 23 adding auxiliary load branch circuit fusing, indicating lights and alarms to the EDG 23 auxiliary load circuits. This modification provided additional means to mitigate future failures by segregating faults to only directly affected auxiliary circuits. It also provided additional monitoring to facilitate quicker identification and repair. A subsequent event, with a clearly identified root cause (related to work being done with a fire blanket in close proximity to a jacket water heater cover) demonstrated the effectiveness of the additional branch fusing in limiting the effect of the failure and allowing more rapid identification of the root cause.

CORRECTIVE ACTION:

Following the event, the investigation described above was launched to determine the cause of the blowing of the fuses.

The circuitry associated with the 23 EDG air compressor control power transformer which caused the previous failure described in LER 92-03 was carefully inspected. No causal relationship to this event was identified.

As discussed in the previous similar occurrence, an amendment to the license will be initiated to clarify the technical specifications regarding EDG fuel inventory requirements.

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