

Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
914 736.8001



Robert J. Barrett
Site Executive Officer

April 28, 1998
IPN-98-048

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 98-002
Inability of Electrical Tunnel Exhaust Fans to
Cool the Cable Spreading Room During DBE's
May Have Placed the Plant Outside Design Basis Due to
a Lack of Clear Documentation and Understanding of Design Basis

Dear Sir:

The attached Licensee Event Report (LER) 98-002 is hereby submitted as required by 10 CFR 50.73. This event is of the type defined in 10 CFR 50.73 (a)(2)(ii)(B).

There are no new commitments being made by the Authority in this letter. If you have any questions, please contact Mr. K. Peters (914) 736-8029.

Sincerely,

Robert J. Barrett
Site Executive Officer
Indian Point 3 Nuclear Power Plant

Attachments

cc: See next page

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cc: Mr. Hubert J. Miller
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

DO NOT MAIL THIS ATTACHMENT TO THE NRC

Internal List of Commitments

Number	Commitment	Due-Date	Responsible Dept/ Manager
IPN-98-048-01	<p>Two ET exhaust fans, one upper and one lower tunnel each powered from separate supplies, are to be placed in manual and run continuously. This interim corrective action was established until operational guidance is in place or final corrective action (modification) for LER 98-002 is installed.</p> <p>Note: Action started 3/31/98. Final corrective action is expected to be done approximately 3 months after Evaluation in ACTS (IPN-98-048-02) is completed.</p>	<p>Internal:</p> <p>Maintain until final corrective actions are implemented (8/31/98)</p>	IOPS/Armando
IPN-98-048-02	An evaluation of the ET and CSR ventilation systems will be conducted to determine the long-term corrective action required. An implementation schedule for the selected corrective actions will be established at that time.	<p>Internal:</p> <p>August 31, 1998</p>	IDEM/ Petrosi
IPN-98-048-03	Conduct a review and reconstitution of the emergency powered ET ventilation system design basis.	<p>Internal:</p> <p>December 31, 1998</p>	IDEM /Petrosi
IPN-98-048-04	An extent of condition will be conducted when the causal factors are determined as part of the extent of condition review for LER 98-01.	<p>Internal:</p> <p>June 15, 1998</p>	IDEM/Petrosi
IPN-98-048-05	The Root Cause of LER 98-002 is inconclusive and is pending further evaluation. A supplemental LER to the NRC will be required if the Root Cause is determined to be different.	<p>Internal:</p> <p>June 1, 1998</p>	IDEM/Petrosi

DO NOT MAIL THIS ATTACHMENT TO THE NRC

Internal List of Commitments

Number	Commitment	Due Date	Responsible Dept/ Manager
IPN-98-048-06	<p>The tunnel temperature will be monitored per shift with guidance to prevent the tunnel temperature from dropping below its minimum acceptable temperature (32°F). This interim action is necessary until operational guidance is in place or corrective action (modification) is taken to address the problem described in LER 98-002. The action is required during cold ambient air temperatures.</p> <p>Note: Special Log 98-15 was stopped 4/15/98 because of expected continued outside air temperature conditions..</p>	Internal: August 31, 1998	IOPS/ Armando
IPN-98-048-07	<p>Established operational (procedure) guidance for two-fan operation and to prevent tunnel temperature from dropping below minimum acceptable temperature (32°F). This will be required to supersede the interim guidance if the ET ventilation system is not modified to address LER 98-002.</p>	Internal: August 31, 1998	IOPS/ Armando
IPN-98-048-08	<p>Evaluate the impact of running the ET exhaust fans continuously because they may have been designed for intermittent or periodic use.</p>	Internal: May 13, 1998	IDEM/ Petrosi
IPN-98-048-09	<p>Determine cause of missed opportunity during the 1994 evaluation of the CSR ventilation design basis and licensing commitments.. What process were used (i.e., DCM7, DCM 2 & DCM 4) and why were these not followed?</p>	Internal: May 21, 1998	IDEM / Petrosi

NRC FORM 366 (4-95)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.</small>
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)		

FACILITY NAME (1) Indian Point 3	DOCKET NUMBER (2) 5000286	PAGE (3) 1 OF 5
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TITLE (4)
 Inability of ET Exhaust Fans to Cool CSR During DBE's May Have Placed the Plant Outside Design Basis Due to a Lack of Clear Design Basis Documentation and Understanding

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
03	31	1998	1998	-- 002	-- 00	04	28	1998	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

OPERATING MODE (9) N	POWER LEVEL (10) 100	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		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)	<input checked="" type="checkbox"/> 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	Specify in Abstract below or in NRC Form 366A				
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)						
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)	
NAME John Bencivenga, Senior Mechanical Engineer II	TELEPHONE NUMBER (Include Area Code) (914)788-2670

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)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO				

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

On March 31, 1998, at about 0840 hours, with the plant at 100 percent power, NYPA concluded that the Electrical Tunnel (ET) exhaust fans might not automatically start when the temperature in the Control Building 33-foot elevation increases during design basis events.

The emergency powered ET exhaust fans might not adequately detect temperature in the Control Building 33-foot elevation and maintain the safety-related equipment in this area within acceptable temperature limits during design basis events and less than maximum design outside air temperature conditions.

The cause is inconclusive and is pending further evaluation. A preliminary assessment attributes the cause to a lack of clear design basis documentation for the ET ventilation system, and a lack of design basis understanding.

Immediate corrective actions were to place two ET exhaust fans, one in the upper and one in the lower tunnel, in manual and run them continuously. An evaluation will be conducted to establish long term corrective action.

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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 in the brackets { }

On March 31, 1998, at about 0840 hours, with the plant at 100 percent power, NYPA concluded that the Electrical Tunnel (ET) exhaust {FAN} fans might not automatically start when the temperature in the Cable Spreading Room (CSR) increases during design basis events.

The CSR is at the 33 foot elevation of the Control Building {NA} and is separated from the ET by a fire wall with an open fire door {DR}. The ET exhaust fans thermostat controls {TC} are located in the electrical tunnel. Using engineering judgement, Design Engineering concluded this configuration may prevent the ET thermostat controls from detecting temperature in the CSR, when the CSR fans are not in operation, prior to the CSR exceeding its design basis temperature. Although this concern was not part of the extent of condition for LER 97-010, this was identified during that effort.

The ET ventilation system is comprised of two 100 percent capacity exhaust fans (31 and 32) for the Lower tunnel and two 100 percent capacity exhaust fans (33 and 34) for the Upper tunnel. The original design of the ET exhaust fans, as described in the Westinghouse Indian Point 3 (IP3) Plant Manual, was to maintain the ET temperature within limits, under both normal and incident conditions with three diesel generators {EK} operating. The Westinghouse IP3 Plant Manual also states that the system operation provides partial ventilation of the CSR by air, which sweeps across the room from the turbine hall. The exhaust fans primary source of air supply is from outside air intake louvers {LV}. Six thermostats in each tunnel control the exhaust fans. The three thermostats {TH} for each exhaust fan are wired in parallel so that any one of them is capable of automatically starting its exhaust fan. The thermostats are set to start fan 31 or 33 when the air temperature reaches 95 degrees F and stop at 90 degrees F; and to start fan 32 or 34 when the temperature reaches 100 degree F and stop at 95 degrees F, in the upper or lower tunnel, respectively.

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Modifications in the early 1980's installed a fire wall between the CSR and the ET. This fire wall interrupted the natural flow of heat from traveling along the ceiling to the ET. Engineering concluded that this affected the ability of the ET exhaust fans to automatically start due to higher temperatures in the CSR because it impaired the ability of the thermostat control system (IM) to sense CSR temperature. This may also be an original design deficiency since no documentation could be located to demonstrate that, prior to the fire barrier installation, the natural flow of heat would have been sufficient to initiate ET fan operation.

The loss of the CSR ventilation system on a Loss of Offsite Power was identified during the extent of condition for LER 93-048. The Engineering evaluation, intended to determine compliance of the CSR ventilation with its design basis, credited the ET ventilation system with being designed to perform cooling of the CSR. This credit was based on the Westinghouse IP3 Plant Manual. No documentation was available to demonstrate that the air flow thorough the CSR was sufficient to maintain design temperature, therefore, a calculation was performed in April of 1994 in an effort to establish the ability of the ET ventilation to perform this function. The calculation, performed to establish the maximum temperature in the CSR assumed, based on HVAC industry standard practice, that the most limiting CSR temperature condition occurs when the outside air temperature is at the design maximum of 93 degrees F. The selection of this outside air temperature led to the determination that two ET exhaust fans would be running to remove the heat in the CSR. This calculation did not bound the design temperature range requirements because the potential inability of the thermostats to sense CSR temperature had not been identified.

The engineering report associated with LER 93-048, and the April 1994 calculation, were used to determine that there was no need to modify the CSR HVAC system because the ET fans would perform the design function. This was a missed opportunity to discover that the ET thermostats may not sense the CSR temperature.

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

CAUSE OF THE EVENT

The cause is inconclusive and is pending further evaluation. Based on investigations to date, the cause is attributed to a lack of clear documentation and understanding of the design basis for the ET ventilation system. This resulted in the failure to identify the effect of adding the fire wall.

A supplemental LER will be forwarded to the NRC if further evaluation determines the cause is different.

CORRECTIVE ACTIONS

- On March 31, 1998 two ET exhaust fans, one in the upper and one in the lower tunnel each powered from separate supplies, were placed in manual and run continuously. This interim corrective action was established until final corrective action is established.
- An evaluation of the ET and CSR ventilation systems will be conducted to determine the long-term corrective action required. This evaluation is scheduled for completion by August 31, 1998. An implementation schedule for the selected corrective actions will be established at that time..
- A review and reconstitution of the emergency powered ET ventilation system design basis will be conducted. This is scheduled for completion by December 31, 1998.
- An extent of condition will be conducted when the causal factors are determined as part of the extent of condition review for LER 98-01.

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ANALYSIS OF THE EVENT

The condition is being reported under 10 CFR 50.73 (a)(2)(ii)(B). The licensee shall report any event or condition that results in placing the facility outside its design basis. The condition is being reported because equipment in the Control Building 33-foot elevation may exceed design temperatures during design basis events with less than maximum design ambient outside air temperature conditions. During these conditions, the emergency powered Electrical Tunnel Ventilation System might not detect CSR temperature and may be unable to maintain the CSR area within acceptable temperature limits.

A review of Licensee Event Reports (LERs) for inadequate analysis of ventilation systems from fire protection modifications identified LER 98-001, 97-010, 95-006, 95-003, 94-006, 93-048.

SAFETY SIGNIFICANCE

The safety significance of this event is under evaluation.

No event has occurred which has increased the CSR temperature to cause failure of redundant safety related equipment in the CSR so there has been no effect on public health and safety.

The potential effects on the public health and safety from postulated design basis accidents, during which the ET exhaust fans may not be running and the CSR could heat to beyond its equipment qualification limit, will be evaluated under LER 98-01.

A recorder is installed in the Central Control Room to provide operators with the means to monitor room temperature at the 33 foot elevation, to anticipate when room temperature approaches the high temperature alarm set point. A high temperature alarm, set at approximately 101 degrees F, will alert operators in the control room of increasing temperature conditions in the Control Building 33-foot elevation. This will require inspection of ventilation systems by operators to mitigate this condition.