

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 3	DOCKET NUMBER (2) 05000286	PAGE (3) 1 OF 8
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TITLE (4) **Plant Outside Design Basis Due to Failure to Analyze Loss of Ventilation Systems In Appendix R Analysis**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
03	20	95	95 -- 006 --	01	07	31	95	FACILITY NAME	DOCKET NUMBER 05000	
								FACILITY NAME	DOCKET NUMBER 05000	

OPERATING MODE (9) N	POWER LEVEL (10) 000	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)				
		<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)				
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER				
		<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)				
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)					
		<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)					

NAME A. Russo, Electrical Engineer	TELEPHONE NUMBER (Include Area Code) (914) 736-6134
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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)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO		MONTH	DAY	YEAR

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

On March 20, 1995, with the plant in cold shutdown, a four hour report provided a preliminary and conservative conclusion that approximately 60 issues identified during a reassessment of Appendix R compliance placed the plant in an unanalyzed condition that may, in aggregate, have significantly compromised plant safety. Subsequent assessment has determined that the aggregate effect of the issues (i.e., that effect beyond the safety significance of the individual issues) is not reportable. However, a reportable event was identified. The effects of a loss of ventilation due to spurious ventilation system operation or spurious CO₂ system operation was not adequately evaluated. The potential effect on public health and safety of this event is not significant. The cause was personnel error. Corrective actions include: upgrading design documents; upgraded procedures; reevaluated / updated Appendix R Analysis, revised procedure for modification review to address fire protection, developed Appendix R Operational Specifications, modified the switchgear room CO₂ system circuitry, revised safe shutdown procedures, installed temperature alarms, revised operation procedures and preparing the fire protection design basis document.

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DESCRIPTION OF EVENT

On March 20, 1995, at approximately 1430 hours, with the plant in cold shutdown (reactor power level at 0%, reactor coolant temperature at 125 degrees Fahrenheit, reactor coolant pressure at atmospheric and the pressurizer level at 22%), Fire Protection Engineering initiated DER 95-0568 to report a conservative and preliminary conclusion that approximately 60 issues (this turned out to be 58), identified during the reassessment of Appendix R compliance, placed the plant in an unanalyzed condition that may, in aggregate, have significantly compromised plant safety. A four hour report was made at 1725 hours.

NYPA has recently completed a reassessment of compliance with 10 CFR 50, Appendix R. In 1994, NYPA reported (IPN-94-115 dated September 9, 1994) that certain issues had been identified and there were internal differences regarding those issues. The resolution of the issues, identified as a result of the NYPA effort to reassess compliance with Appendix R and prepare a fire protection Design Basis Document (DBD), was complicated by the internal differences of opinion. Independent consultants were tasked with oversight of NYPA's efforts in reviewing the issues and concurring on resolutions consistent with industry practice. The four hour report was made following a meeting to review the reportability of the issues. At that meeting, NYPA concluded that a final decision on reportability would require further review and documentation even though no specific basis for reporting individual items was identified. However, because a conclusion could not be reached concerning the reportability of the aggregate effect of the issues, NYPA made a decision to conservatively make a four hour report based on the preliminary conclusion that, in aggregate, the issues may have significantly compromised plant safety. NYPA recently reported (IPN-95-039 dated March 28, 1995) that evaluations of 55 of the 58 issues were complete and startup corrective actions were identified and completed, where required.

A subsequent assessment of the issues by an interdepartmental working group has determined that the aggregate effect of the issues (i.e., that effect beyond the safety significance of the individual issues) did not significantly compromise plant safety. However, an event was identified as reportable (note - several questions are still being addressed on issues identified as not reportable). The 1984 Appendix R Analysis did not adequately consider the effects of a loss of ventilation due to spurious ventilation system operation or spurious CO₂ system (LW) operation for the Cable Spreading Room (CSR), the 480V Switchgear (SWGR) Room (SR), and the Emergency Diesel Generator (DG) (EDG) cells.

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A fire in either fire area TBL-5 or YARD-7 could have caused a loss of ventilation in the SR and CSR. A fire in fire area TBL-5 could also have caused a loss of ventilation in the three EDG cells. If a CO₂ discharge occurred, the Control Room (NA) (CR) would have received an alarm and the Fire Brigade would have responded. If a CO₂ discharge did not occur, Operations would have been responsible for addressing the loss of ventilation. However, there is no direct indication of ventilation system operation in the CR. The Fire Brigade and Operations had no procedural guidance or training to allow them to recognize the need to establish portable ventilation or reestablish normal ventilation or to identify the time frame for performing those corrective actions. The ability of the plant to respond to a spurious loss of ventilation could not be considered acceptable due to these factors.

The failure of the 1984 Appendix R Analysis to adequately evaluate the effects of a loss of ventilation due to spurious ventilation system operation or spurious CO₂ system operation in the SR, CSR and EDG cells resulted in non compliance with the requirements of 10 CFR 50, Appendix R, Section III.G.2. Currently, compliance is based on the following:

- The SR ventilation can no longer be isolated by a spurious signal in the TBL-5 or YARD-7 fire areas.
- The spurious loss of ventilation to multiple EDG cells is not required when operator action is taken to prevent further spurious actuation (application of Generic Letter 86-10 guidance) and all three diesels are not required for shutdown. If there is indication of CO₂ initiation or a fire in the CSR, SR or any EDG cell, the pre-fire plans require the Fire Brigade restore the associated ventilation, if lost, and to isolate power to the associated CO₂ control panel. Also, alarm response procedure 15 requires operations to restore ventilation if there is a high temperature alarm and no fire.
- The required action to restore ventilation to the CSR is simple (open one damper and a door) and heat loads are not as significant as those in the EDG cells. If there is indication of CO₂ initiation or a fire in the CSR, SR or any EDG cell, the pre-fire plans require the Fire Brigade restore the associated ventilation, if lost, and to isolate power to the associated CO₂ control panel. Also, alarm response procedure 13 requires operations to restore ventilation if there is a high temperature alarm and no fire.

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Procedure ONOP-FP-1 is being revised to provide operator guidance for preventing spurious isolation and for restoring ventilation if it occurs.

Design Engineering evaluated the cause of the event and identified the following:

- The modification that installed the CO₂ System (completed in 1981) classified portions of the CO₂ System as Category I since the areas they protect (i.e., EDG cells, cable spreading and switchgear rooms) contain safety related equipment. The Nuclear Safety Evaluation (NSE) did not discuss the specific requirements imposed by the classification (i.e., seismic interaction or functional requirements). For the EDG cells, the NSE should have considered the potential for seismically induced damage or spurious operation to cause loss of ventilation (the cable spreading and switchgear room ventilation systems were not Category I at that time). It would have been appropriate to consider the interfaces between non-safety and safety related equipment since 10 CFR 50, Appendix R, Section III.G was in effect when the modification was completed. The Plant Equipment Data Base indicates that components of cable spreading and switchgear room ventilation systems were upgraded to Category I in 1986 but the potential for spurious operation was not identified at that time. Due to incomplete documentation and elapsed time, Design Engineering could not identify the reason for the personnel error in failing to identify the potential system interaction but inadequate procedural guidance is suspected.
- Design Engineering also found that the Appendix R Analyses through 1984 did not adequately evaluate spurious operation of the EDG Cell CO₂ Systems due to potential effects of fire damage on CO₂ System circuits. The specific cause of the deficiency could not be established. Design Engineering assumed that the potential for spurious operation was missed due to the fact that the design documents (e.g., plant drawings and cable schedules) which were used at the time of the 1984 Analysis did not provide sufficient information to readily identify this issue.

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CAUSE OF EVENT

The cause of the event was personnel error, inadequate engineering evaluations during the modification process and the preparation of the Appendix R analyses (through 1984). The reasons for the personnel error could not be determined but inadequate procedural guidance is suspected.

CORRECTIVE ACTIONS

The following actions have been or are being performed to provide corrective action and prevent recurrence of these types of deficiencies:

- The pre-fire plans have been revised. If there is indication of CO₂ initiation or a fire in the CSR, SR or any EDG cell, the pre-fire plans require the Fire Brigade to restore the associated ventilation, if lost, and to isolate power to the associated CO₂ control panel.
- Corrective action for the event identified in LER 95-003-00 was a modification to the circuitry for initiating CO₂ in the switchgear room so that a fire in fire area TBL-5 or YARD-7 could not cause loss of ventilation.
- Additional guidance has been prepared for operator action. Procedure ONOP-FP-1 was revised to indicate how to prevent a spurious loss of ventilation and provide a methodology for restoration of ventilation following spurious isolation.
- Alarms in the Control Room indicating high ambient temperatures (about 100°F) in the CSR and SR were added as corrective action to an event identified in LER 93-048-02. Each EDG cell has an alarm in the Control Room indicating high ambient temperatures (about 115°F).
- To assure long term compliance with the requirements of Appendix R, the following programmatic corrective actions have been completed: Appendix R Analysis updated, Fire Hazards Analysis updated, the

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Fire Area drawings revised, procedure for modification review revised, detailed fire protection Operational Specifications developed, plant modifications installed between 1984 and 1995 reviewed, Multiple High Impedance Fault (MHIF) study performed, safe shutdown procedures revised, fire barrier penetration seals reinspected/reevaluated, fire barrier penetration drawings updated and a long term compliance program implemented. The long term compliance program requires continual updating and revision of the above documents and procedures to keep them current and reflect any new issues that may be identified.

- The IP3 Fire Protection Design Basis Document will be completed by December 29, 1995. This repeats commitment IPN-95-003-04.
- The revised safe shutdown procedures have been walked down and the operators have been trained in them.
- The Fire Protection/Appendix R procedure (FPES-04B) has been revised to address areas required. These areas include changes to Appendix P strategy / commitments.
- The Authority's Modification Control Manual (MCM) and Design Control Manual (DCM) program procedures became effective in 1989. They now require engineering to analyze the failure modes for equipment for modifications and the questions of 10 CFR 50.59 to be addressed in writing when modifying a classification. Adherence to the MCM program provides assurance that this type of event will not occur in future modifications.
- Electrical Engineering has identified Design Documents for the EDG cells, Switchgear room, and Cable Spreading room ventilation systems which will be revised to include the CO₂ system interface with the ventilation system. Electrical Engineering will confirm that the revision to these documents is sufficient for the design control process. This activity is scheduled for completion by December 15, 1995.

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ANALYSIS OF EVENT

This event is reportable under 10 CFR 50.73.(a)(2)(ii)(B). The 1984 Appendix R analysis did not adequately evaluate the loss of ventilation due to spurious ventilation system operation or spurious CO₂ system operation due to fire. A fire in fire area YARD-7 could have made the SR and CSR ventilation systems inoperable and a fire in fire area TBL-5 could have made the SR, CSR and EDG cell ventilation systems inoperable when they were required to support safe shutdown of the plant. The design basis required the support function to be provided.

Additional events related to fire protection are discussed in LERs 95-001, 002, and 003, 94-010, and 012, 93-007, 018, 022, 029, 031, 037, 038, 041, 051, and 055, and 92-010, 016 and 017.

SAFETY SIGNIFICANCE

The event did not significantly effect the public health and safety.

No fire has occurred which induced a loss of ventilation in the SR, CSR or EDG cells due to spurious ventilation system operation or spurious CO₂ system operation.

An assessment by Fire Protection indicates that the effect of the event on public health and safety would have been minimal for a fire in the TBL-5 and Yard-7 fire areas.

- Fire Area TBL-5:

A fire in this area could have initiated isolation of the ventilation systems in the three EDG cells, if there were three separate spurious operations of three EDG cell CO₂ system circuits. The panels for the three EDG CO₂ systems are located outside the SR on the 15' elevation of the Turbine Building. The wiring runs from the panels to a common cable junction box and then about 10' before entering the Control Building. The postulated event is unlikely to occur prior to significant fire damage since this area is protected by an automatic wet pipe sprinkler which could have extinguished or controlled the postulated fire prior to the fire brigade response. The Fire Protection assessment is based on a number of factors to limit direct cable exposure: minimal combustibles adjacent to the

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panels; the construction features of the CO₂ panels; the junction box construction; and, the routing of the cables in conduit. Additionally, the area is open and frequently traveled so it is expected that a fire would be easily detected.

A fire in this area could also initiate isolation of the CSR and SR ventilation systems if there were spurious operation of the CO₂ system circuits. Spurious operation could occur if there were damage to the cables that are routed from the Administration Building through the Turbine Building. Damage to the cable is unlikely because the cable is routed in conduit located about 5' below the mezzanine elevation. Cable failure would require a hot layer from the fire to engulf the conduit and raise the temperature substantially. This is unlikely because the hot gas layer would tend to rise above the conduit and vent through the unloading bay. Since the area is protected by a wet pipe sprinkler system, Fire Protection expected that the sprinkler system would actuate prior to cable failure.

- Fire Area Yard 7:

A fire in this area could initiate isolation of the CSR and SR ventilation systems if there were spurious operation of the CO₂ system circuits. The panel for the CSR and SR CO₂ systems are located on the 15' elevation of the west side of the Administration Building. The cables from the panel are routed in conduit about 5' below the ceiling until they reach the Turbine Building. This area is protected with a wet pipe system. Fire Protection concluded that it was unlikely a fire could cause spurious operation prior to the fire being controlled or extinguished, unless the fire was in the panel itself. If the isolation of the SR ventilation were to occur, the Appendix R diesel generator with associated switchgear and MCC located in the Turbine Building, would be available for safe shutdown. If the isolation of the CSR ventilation were to occur, the closing of the fire door would be indicated in the CR. Operations found that it was reasonable to expect that ventilation would have been restored by an operator in response to the signal even though there was no procedure available.