

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: 50.0 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.

FACILITY NAME (1)

Indian Point 3

DOCKET NUMBER (2)

05000286

PAGE (3)

1 OF 5

TITLE (4)

Potential Failure or Inadvertent Operation of Fire Protection Systems, Caused by Personnel Error In Design, Could Cause a Loss of Cable Spreading Room Cooling, Placing the Plant Outside Design Basis

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
02	25	98	98	001	00	03	27	98	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

OPERATING MODE (9)	N	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)(vii)
POWER LEVEL (10)	100	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)	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

Frank A. Bloise, Senior Electrical Engineer

TELEPHONE NUMBER (Include Area Code)

(914) 788 - 2142

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)

YES (If yes, complete EXPECTED SUBMISSION DATE).	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/>			8	4	98

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

On February 25, 1998, with the plant at 100% power, Operations found that the plant was outside its design basis because a loss of ventilation to the cable spreading room could result from a failure of the cable spreading room CO2 fire suppression system, a failure of the electrical tunnel fire detection system, or a design basis event (loss of offsite power or safety injection). This condition could have adversely affected the operation of safety-related systems and/or components located in the room. This event was caused by human error during the design process. Immediate corrective action was taken to post a fire watch, disable the CO2 control circuitry interlock (affects fire dampers), and restrain the fire door from automatically shutting. This event was identified as part of the extent of condition for LER 97-010 and was reported to the NRC as a one hour report. Corrective actions yet to be performed include modifying the fire protection system, clarifying the design criteria, and assessing past event evaluations. This event did not effect public health and safety. The potential effect on public health and safety from postulated events is still under evaluation.

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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 February 25, 1998, with the plant at 100 percent power, Operations found that the plant was outside its design basis because a loss of ventilation to the cable spreading room (CSR) could result from a failure of the CSR CO2 fire suppression system {LW}, a failure of the electrical tunnel (ET) fire detection system, or a design basis event (loss of offsite power or safety injection). The CSR ventilation fans {FAN} are not safety-related, so the CSR depends upon the ET ventilation system to maintain the temperature of the CSR within equipment design limits during design basis events. This event was identified as part of the extent of condition for LER 97-010 and was reported to the NRC as a one hour report. Immediate corrective action was taken to correct the as found condition by posting a fire watch and by assuring that no failure could cause loss of ventilation (the fire door separating the CSR and ET was restrained open and the CO2 control circuitry interlock that would shut the fire dampers was de-energized).

The Design and Analysis Group identified the potential for loss of CSR ventilation due to a fire protection system failure while evaluating the extent of condition for LER 97-010. The evaluation determined that a failure or inadvertent operation of the CSR CO2 fire suppression system detectors or circuitry due to a seismic event or a single relay failure could actuate the CO2 system which could shut down CSR exhaust fans 31, 32, could shut down battery room exhaust fans 1, 2, and could close louver L-320, fire dampers FP-DF-10, FP-DF-11, FP-DF-12, FP-DF-13, FP-DF-50, and fire door FDR-30-CB. These actuations isolate the CSR from the ET and from outside air. The evaluation also determined that a failure or inadvertent operation of the ET smoke detection system (detectors and circuitry are not seismically designed or single failure proof) or loss of power could cause Fire Door FDR-30-CB to close which would isolate the ET fans from the CSR during design basis events.

The fire protection system was designed to meet the requirements of Branch Technical Position (BTP) APCSB 9.5-1 (May 1, 1976) and Appendix A to BTP APCSB 9.5-1 (August 23, 1976) which stated: Postulated fires or fire protection system failures need not be considered concurrent with other plant accidents or the most severe natural phenomena; Failure or inadvertent operation of the fire suppression system should not incapacitate safety-related systems or components. To apply these criteria, the fire protection system design should have considered the consequential effects of the plant accidents and severe natural phenomena in order to preclude failure and, when electronically interconnected with a safety system, should have considered the affects of single failure.

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During normal operation, the failure or inadvertent operation of the ET fire detection system or the CSR CO2 fire suppression system would be annunciated in the control room (CR) by non safety-related alarms associated with the Fire Display Control Panel. A loss of Battery Room ventilation would also be annunciated for the CSR event. The alarm response procedures do not specify the restoration of ventilation but the off normal procedure used to respond to plant fires identifies detailed procedures for restoration of ventilation. Modification MMP 94-03-055 CBHV installed a safety-related room high temperature alarm and the associated alarm response procedure (ARP-13) was revised to restore ventilation following investigation of an alarm. ARP-13 was found to provide inadequate guidance for restoring ventilation. This guidance is no longer required to address the single failures or consequential failures of this event due to the corrective actions already taken.

A failure or inadvertent operation of the ET fire detection system or CSR fire suppression system could occur as a consequence of a seismic event (this was assumed because the detectors and circuitry of these systems are not seismically qualified), or as a consequence of a design basis event (the fire door would shut on loss of offsite power or load stripping due to SI). The CSR fire suppression system could actuate as a consequence of a single failure postulated during a design basis event (this was assumed because the CO2 system is electrically connected to the ventilation system so the effects of a single failure of the fire protection system must also be considered in ventilation system design basis events).

The cable spreading room contains safety-related equipment and non safety-related equipment in the following plant systems: 125VDC, 120VAC, reactor protection, pressurizer pressure control and rod control. A loss of ventilation could adversely affect the operation of this equipment.

This event was not identified while evaluating other ventilation system design deficiencies. This event was identified as part of the extent of condition for LER 97-010. The reasons that past engineering evaluations did not identify the events reported in this LER or LER 97-010 are under evaluation and corrective action will be identified and initiated. The related LERs are 93-048, 94-006, 95-003, 95-006 and 95-020. LER 93-048 reported single failures that could cause loss of ventilation. The engineering evaluation for the event did not look at the fire protection relay because it was outside the ventilation system boundary. LER 94-006 identified single electrical failures in the control room ventilation system. LER 95-003 reported that a single failure of a fire protection system relay could cause loss of ventilation in the switchgear room and the lower cable tunnel. LER 95-006 reported that the Appendix R analysis did not adequately consider the effects of a fire induced loss of ventilation due to inadvertent CO2 or ventilation system operation in the cable spreading room, switchgear room, and emergency diesel generator cells. LER 95-006 reported that the initial CO2 modification classified portions of the CO2 system as Category I since the areas they protect contain safety-related systems. The LER also noted that the subsequent evaluation and upgrade of components of the CSR did not identify the reported failure modes. The corrective action upgraded procedures but did not address the potential failure identified here or in LER 97-010. LER 95-020 summarized the issues from the Appendix R reanalysis.

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CAUSE OF THE EVENT

This event was caused by human errors during the design process. As reported in LER 95-006, this error occurred during the evaluation and subsequent upgrade of components to safety-related in the cable spreading room ventilation system. The error was due to a lack of understanding and inadequate documentation of the ventilation and fire protection system design bases.

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed in order to address the deficiencies identified during the investigation of this event and to prevent recurrence:

On February 25, 1998 a fire watch was posted; the CO2 control circuitry interlock with the control circuitry of the fire dampers was disabled and the fire door was restrained from automatically shutting.

Modification MMP 97-03-400 FP CO2 will modify the fire protection system so that ventilation for the CSR would not be lost as a consequence of a design basis event or due to a single failure. This modification is scheduled to be installed by December 31, 1998 and changes the schedule for the CO2 modification in LER 97-010.

Clarify and document the design basis of the fire protection and the ventilation systems to clearly identify the design criteria in this LER. This corrective action is scheduled to be complete by January 15, 1999.

The safety significance of this event is still under evaluation and this LER will be updated to reflect that evaluation. The LER revision is scheduled for August 4, 1998.

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.73 (a) (2) (ii) (B). A failure or inadvertent operation of the CSR CO2 suppression system or ET fire detection system as well as design basis events (loss of offsite power and safety injection) could result in a loss of ventilation required to support the continued operational environment of safety related equipment in the CSR. This could have placed the plant outside its design basis.

Similar events (failure of a fire suppression system adversely affecting safety-related systems/components) were reported in LERs 93-048, 94-006, 95-003, 95-006, 95-020 and 97-010.

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SAFETY SIGNIFICANCE

The safety significance is still under evaluation.

No event has occurred which resulted in the consequential loss of the CSR ventilation system so there has been no actual effect on public health and safety.

This LER will be supplemented to identify potential effects on public health and safety for postulated plant conditions where there could have been a loss of ventilation. The potential safety significance of this event will consider the failures of the ventilation systems addressed in this LER as well as those identified in LERs 93-048, 95-003, 95-006, and 97-010 the others are not pertinent.