NRC FORM 366
U.S. NUCLEAR REGULATORY COMMISSION
(4-95)

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station Unit 1	05000413	1 of 7

TITLE (4)
Technical Specification 3.0.3 Entry due to Inoperability of Both Trains of Control Room Ventilation caused by Improper System Isolation

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(S)
7	6	1998	1998	-	012	-	00	8	5	1998	Catawba Unit 2	05000414

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11)							
POWER LEVEL (10)	100		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
			20.405(a)(1)(iii)	X	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	
	AREA CODE	
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	
				N/A							

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

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

On July 6, 1998 at 1300 hours, with Unit 1 and Unit 2 operating in Mode 1 (Power Operation) at 100% Power, it was discovered that both trains of Control Room Ventilation were inoperable. Operators in the Control Room noticed that they were not getting the normal amount of pressure difference when transiting through the Control Room doors. This was caused by failure to properly secure a damper in the closed position when isolating the system for maintenance work. The unsecured damper provided a leakage path from the Control Room through an air handling unit access door that was open for installation of a modification. Both trains were inoperable for a total of two hours and six minutes. The safety significance of this event was minimal because of the short time involved and the limited scope of the modification. The root cause was determined to be inadequate training for the activity of securing the damper. The condition was corrected by properly securing the damper in the closed position. Subsequent corrective actions included revising the applicable procedure to address the method of securing the damper, training on how to secure the damper, and improving human factors aspects of the securing mechanism. Several actions were taken to address recurring ventilation system events.

Background

Catawba Unit 1 and Unit 2 are four loop Westinghouse units. The Control Room Area Ventilation System [EIIS:VI] is shared between Units and consists of two redundant trains of equipment. The system includes two 100% capacity air handling units [EIIS:AHU], two 100% capacity outside air pressurizing filter [EIIS:FLT] trains and associated ductwork [EIIS:DUCT] and dampers [EIIS:DMP]. The system is designed to maintain the Control Room [EIIS:NA] at a positive pressure of at least 1/8 inch water gauge relative to adjacent areas. In order to work on one train of the system, three dampers on the opposite train must be secured in the closed position. For example with the B Train operating, dampers 1CR-D-4, 1CRA-D-1, and 1CR-D-10 must be secured. These dampers are equipped with securing devices. Two of these dampers (1CR-D-4 and 1CRA-D-1) can be isolated in a simple and straightforward manner. The method for isolating damper 1CR-D-10 is more complex since the damper positions are not clearly marked and it is not clear where the securing mechanism should be positioned.

Access Doors [EIIS:DR] on Control Room Air Handling Units must be removed periodically to change filters and inspect cooling coils [EIIS:CCL]. The current mounting of the access doors has caused problems with stripping fasteners when removing and reinstalling the doors. Modification CNCE-8786 was initiated to provide an improved method of attaching the access doors to the air handing units.

Technical Specification (TS) 3.7.6 "Control Room Area Ventilation System" requires two independent trains of Control Room Ventilation to be operable in all modes. Technical Specification 3.7.6 Action a. provides a seven day action statement when one train is inoperable.

Technical Specification 3.0.3 states that when a limiting condition for operation is not met, except as provided in an associated action statement, within one hour action must be taken to place the unit in a mode in which the specification does not apply by placing it in at least HOT STANDBY within the next six hours, at least HOT SHUTDOWN within the following six hours and at least COLD SHUTDOWN within the subsequent 24 hours.

Event Description

July 6,1998 0400 Units 1 and 2 were operating in Mode 1 (Power Operation) at 100% power. Operations declared A Train of the Control Room Ventilation System inoperable for pre-planned maintenance.

B Train of the Control Room Ventilation System was in operation.

July 6,1998 0513 — An Operations non licensed operator performed tagout 08-1187 which required Dampers 1CR-D-4, 1CRA-D-1, and 1CR-D-10 to be secured in the closed position. This was done to ensure the B Train remained operable while Maintenance installed modification CNCE-8786. The operator unknowingly failed to secure damper 1CR-D-10 correctly.

July 6,1998 0830 — Maintenance started work on the modification per Work Order (W/O) 98028326-01.

July 6,1998 1000 — Maintenance opened the Air Handling Unit access door. This created a leakage path from the Control Room through the unsecured damper and out the open air handling unit door into the Auxiliary Building [EIIS:NF]. Maintenance noted an air draft as the access door was opened but did not notice a sustained airflow thereafter.

July 6,1998 1150 — Maintenance closed the access door and left the area for the noonday meal.

July 6,1998 1245 — Operators had noticed during the morning of July 6,1998 that they were not getting the normal amount of pressure differential when transiting through the Control Room Doors. Operators decided to perform Enclosure 4.11 "Control Room Differential Pressure (D/P) Verification" of Operations Procedure OP/0/A/6450/011 "Control Room Area Ventilation/ Chilled Water System" to ensure that the required positive pressure existed in the Control Room.

July 6,1998 1300 — Maintenance reopened the access door to continue work on the modification.

July 6,1998 1300 — Operations performed the Control Room D/P Test just after Maintenance reopened the access door. The test showed that the differential pressure between the Control Room and adjacent areas was 0.0 inches water gauge. Operations entered Technical Specification 3.0.3. Operators immediately investigated and found that damper 1CR-D-10 was not properly secured closed.

July 6,1998 1316 Damper 1CR-D-10 was properly secured closed and Enclosure 4.11 "Control Room D/P Verification" of Operations Procedure OP/0/A/6450/011 was performed again. The differential pressure was measured to be 0.21 inches of water which met the acceptance criteria of 0.13 inches of water. Operations returned B Train to operable status and exited Technical Specification 3.0.3.

Conclusion

This event was caused by improperly securing damper 1CR-D-10. Several factors contributed to the unsuccessful isolation of the damper. The damper did not have a clearly marked position indicator, there were no match marks to denote where the securing device and the damper arm should have been attached, and the training for the task was not adequate. The root cause was inadequate training on the method for properly securing damper 1CR-D-10. There are three dampers in the Control Room Ventilation System that are required to be secured closed to ensure train separation and operability of the opposite train. Control Room Ventilatior System training includes information on the correct method for securing these dampers. This training is given on a four year rotation frequency. No other training or qualifications are in place for these dampers. Interviews with nine operators revealed that only one remembered the training. A special training package has been developed that clearly describes how to properly secure the dampers. Part of the package requires the operators to observe the dampers in the plant to ensure complete understanding. Other barriers have been put in place to prevent this event from recurring. Procedure enclosures have been developed that contain detailed steps for securing the dampers. This procedure will be used any time one of the dampers needs to be secured closed. In addition, color coded match marks have been painted on the damper securing devices as an ergonomic improvement.

During the past twenty four months there has been one other reportable event that had a similar root cause. That event was described in LER 413/98-002 "Incorrectly Set Valve Leads to Elevated Condensate Storage System Temperature, Causing Condition Outside Design Basis of the Plant." That LER identified inadequate training, procedures, and job aids as root causes. In that event Operations Training was not notified of the need to train on the unique characteristics of the valve controller because these characteristics were not communicated by Modification Engineering. This resulted from a weak process for review of modifications for potential training needs. That process was in place in the early 1990's and it has been substantially improved since that time.

The event described in this LER involves the task of securing a damper in the closed position. In this case Operations Training was aware of the unique characteristics of the damper and had developed training. However the training was not effective at preventing this event.

This event can also be considered recurring on a systems basis in that there have been seven other LERs in 1998 involving various ventilation systems.

These were:

413/98-001	Both trains of Control Room Ventilation Inadvertently Disabled During Restoration Caused by Inadequate Maintenance Procedure
413/98-003	Omission in Retest Manual Leads to Failure to Perform Required Retest Prior to Restoring Containment Isolation Valves to Service
414/98-001	Tech Spec 3.0.3 Entry due to an inoperable Annulus Ventilation System
414/98-002	Violation of Auxiliary Building Filtered Exhaust System Technical Specification 3.7.7 due to Low Flow from Filtered Exhaust Fan 2A
413/98-005	Missed Tech Spec Surveillance on Auxiliary Building Ventilation System due to misinterpretation of Surveillance Requirement 4.7.7.d.1.
413/98-006	Missed Technical Specification Surveillance on Pressurizer Heater Emergency Power Supply Testing due to a Literal Compliance Issue
413/98-007	Missed Technical Specification Surveillance on Containment Penetration Testing due to a Literal Compliance Issue

The Site Vice President has initiated the steps described in Subsequent Corrective Actions 1, 2, and 3 described below to address these recurring items.

There are no EPIX reportable equipment failures associated with this event.

Corrective Actions

Immediate

1. Operations performed Enclosure 4.11 of OP/0/A/6450/011 and determined that the Control Room pressure did not meet the acceptance criteria. An operator was immediately dispatched to investigate. It was determined

that damper 1CR-D-10 was not properly secured. The operator secured the damper properly.

Subsequent

1. Management held a "Timeout" with all personnel to discuss 1998 reportable events associated with ventilation systems. About half of the 1998 reportable events have involved ventilation systems.

2. Management formed an "Event Investigation Team" to perform a general review of reportable events which have occurred on ventilation systems during 1998. The team focused on the operation and maintenance of safety related ventilation systems.

3. Management formed a "Ventilation Oversight Team" to review and assist in any planned or emerging work associated with nuclear safety related ventilation systems. This team will review planned work prior to the activity, walkdown the job before it takes place, provide field oversight while the work is in progress, and look for possible improvements in ventilation systems and processes. The team has full time representatives from Engineering, Operations, and Maintenance. The team has "stop work" authority. This team will remain in place until ventilation system events are reduced.

4. A color code was added to mark the J-Bolt and the place on the damper arm where it should be attached.

5. Operations revised procedure OP/0/A/6450/011 "Control Room Area Ventilation/Chilled Water System" to include Enclosure 4.17 and 4.18 which provide instructions for isolating the Control Room Ventilation System for maintenance. Enclosure 4.17 and 4.18 Step 2.10 address attaching the red (J-Bolt) hook to the red arm on the damper counterweight.

Planned

1. Operations Training will develop and present training to the operators on securing Control Room Ventilation System dampers as specified in Procedure OP/0/A/6450/011.

Safety Analysis

The Control Room was not properly pressurized from 1000 to 1150 and from 1300 to 1316 on July 6, 1998. During these times the 90 degree Fahrenheit Control Room temperature limit of Technical Specification 3.7.6 was not approached. During these time periods the Control Room Air Handling Unit 1CR-AHU-1 Access Door was open for installation of a modification. Damper 1CR-D-10 was not secured closed. In this alignment the Control Room was not pressurized to greater than 1/8 inch water gauge. Therefore, both trains of the Control Room ventilation system were inoperable for two hours and six minutes. The probability of occurrence of an accident necessitating Control Room pressurization for accident mitigation during this short time is very small. Furthermore, the modification work was of a limited scope such that the normal configuration could have been quickly restored in the event of an accident. The health and safety of the public were not affected by this event.