

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Cooper Nuclear Station DOCKET NUMBER (2) 050002981 OF 04 PAGE (3)

TITLE (4) Initiation of Plant Shutdown Due to Malfunctioning Pressure Suppression Chamber - Reactor Building Vacuum Breaker Valves

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)
08	08	87	87	019	000	09	15	87			05000
											05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (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 Donald L. Reeves, Jr. TELEPHONE NUMBER 402825-3811 AREA CODE

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		
B	BFA	FRG	H198	Y							

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

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

On August 8, 1987, at 2:30 AM, one of the two Pressure Suppression Chamber - Reactor Building Vacuum Breaker Valves (PC-243AV, a 20" air operated butterfly valve) repositioned from its normally closed to a partially open position when a gasket on the in-line Air Filter/Pilot Air Regulator failed. Subsequently, a slow decrease in Primary Containment pressure was observed which, upon further investigation, was determined to be due to the fact that the corresponding Pressure Suppression Chamber - Reactor Building Vacuum Relief Valve (CV-13, which is a 20" wafer check valve) was not fully seated. A plant shutdown was initiated and a Notification of Unusual Event (NOUE) was declared based upon an apparent loss of Primary Containment Integrity.

The cause of the event was determined to be due to Vacuum Breaker Relief Valve CV-13 not being fully seated which, in turn, was due to lack of a prescribed technique for test performance in the surveillance test procedure. The cause of the in-line Air Filter/Pilot Air Regulator gasket failure is not known.

Immediate corrective actions taken included dispatching Operations personnel to the vicinity of the malfunctioning valves and manually causing the Vacuum Relief wafer check valve to seat. In so doing, the slow decrease in Primary Containment pressure was stopped. Repairs were made to the in-line Air Filter/Pilot Air Regulator assembly and, by 5:55 AM, a satisfactory surveillance test on PC-243AV had been completed. The valve was declared operable and the shutdown terminated. Additionally, further tests were conducted on the Vacuum Breaker Relief Valves (CV-13 and CV-14) to assure valve operability and to enhance surveillance procedure technique. Further corrective action to be taken includes a change to the surveillance procedure to adequately describe test technique and to verify that the wafer check valves are seated following demonstration of their operability.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

A. Event Description

On August 8, 1987, at 2:30 AM, one of the two Pressure Suppression Chamber - Reactor Building Vacuum Breaker Valves (PC-243AV, a 20" air operated butterfly valve) repositioned from its normally closed to a partially open position when a gasket on the in-line Air Filter/Pilot Air Regulator failed. Due to the gasket failure, the supply air pressure to the valve operator was substantially reduced, allowing the valve to reposition (fail open upon loss of air). Subsequently, a decrease in Primary Containment pressure was observed which, upon further investigation, was determined to be as a result of the upstream Pressure Suppression Chamber Reactor - Building Vacuum Relief Valve (CV-13, which is a 20" wafer check valve) not being fully seated. Upon noting a slow decrease in Primary Containment pressure, a plant shutdown in accordance with the requirements specified in Paragraph 1.0.J. of the Technical Specifications was initiated, since compliance to Technical Specification Paragraph 3.7.A.2 (Containment Integrity) was not assured. Additionally, a Notification of Unusual Event (NOUE) was declared due to the apparent loss of Primary Containment integrity.

B. Plant Status

Operating at 100 percent power under normal steady state conditions.

C. Basis for Report

The circumstances associated with the valve failure and apparent loss of Primary Containment integrity were documented on a Nonconformance Report (NCR) and were briefly described in a letter (CNSS876005, G. R. Horn to R. D. Martin, dated August 8, 1987), to close out the NOUE. In accordance with the disposition instructions noted on the NCR, an evaluation of the situation was conducted to determine reportability in accordance with the reporting criteria prescribed in 10CFR50.73. This evaluation was completed on August 24, 1987, with the conclusion being that the event was reportable in accordance with 10CFR50.73(a)(2)(i)(B), operation of the plant in a condition prohibited by Technical Specifications.

D. Cause of Event

Leakage from Primary Containment occurred, subsequent to PC-243AV repositioning, due to Vacuum Breaker Relief Valve (CV-13) not being fully seated. An investigation into the reason for CV-13 not being fully seated resulted in the determination that the technique employed to conduct the routine monthly surveillance test of valve operability was not sufficiently detailed in the surveillance test procedure. Additionally, the procedure did not contain any requirements to verify that the valve was fully seated subsequent to test completion. Consequently, the cause of this event is due to a procedural deficiency. With respect to the gasket failure on the in-line Air Filter/Pilot Air Regulator, the valve operators for PC-243AV (and PC-244AV), including the in-line Air Filter/Pilot Air Regulator, were replaced during the 1986 Refueling Outage by contract maintenance personnel. The cause for the gasket failure is unknown. Two hypotheses have been advanced:

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

- 1) The originally supplied gasket may have been defective, or
- 2) During installation, the bowl housing may not have been sufficiently tightened.

The corresponding installation on the redundant valve (PC-244AV) was checked and no deficiencies were noted.

E. Safety Significance

The primary safety function of the Pressure Suppression Chamber - Reactor Building Vacuum Breaker Valves is to provide vacuum relief for the Pressure Suppression Chamber subsequent to a design basis loss of coolant accident. This function was not impaired by the gasket failure and resulting supply air pressure reduction to PC-243AV, since the valve remained capable of repositioning to a fully open position to provide the vacuum relief function. Additionally, the redundant valve, PC-244AV, was fully operable regarding this safety function. Therefore, no degradation in the ability of the valve (or the system) to properly perform its vacuum relief function under accident conditions would have been expected.

During normal operation, both PC-243AV and CV-13 also function as a Primary Containment isolation barrier. Due to the fact that PC-243AV repositioned to a partially open position and that the corresponding wafer check valve (CV-13) was not fully seated, a small leak path from Primary Containment into Secondary Containment was created. An approximation of this leak rate was made, based upon data available from normal plant instrumentation and using local leak rate testing formulas. The leak rate was calculated to have been 1175 SCFH for approximately one (1) hour. This value is in excess of the total allowable Primary Containment Leak Rate of 316 SCFH; however, airborne sampling in the vicinity of the valves was performed and no radiological problems were determined to exist. Hence, under the conditions which existed, the leakage of Primary Containment atmosphere through the valves posed no radiological problem of any significance. Had a Primary Containment pressurization transient occurred (e.g., a loss of coolant accident) during the time frame when both valves were partially open, the increased pressure differential would have fully seated the wafer check valve flappers and the Primary Containment isolation function would have operated as designed.

F. Corrective Action

As noted previously, immediate action was taken to initiate a plant shutdown and activate the Emergency Plan through declaration of a NOUE. Additionally, on-shift Operations personnel were dispatched to the vicinity of the malfunctioning valves and the Vacuum Relief wafer check valve was manually caused to seat. Upon seating the valve, the decrease in Primary Containment pressure was stopped. Maintenance personnel were summoned and repairs were effected to the in-line Air Filter/Pilot Air Regulator assembly. By 5:55 AM, approximately 3 hours and 15 minutes after PC-243AV repositioned, repairs were complete, a satisfactory surveillance test on PC-243AV had been completed, and the valve was declared operable. As a result, the NOUE was terminated and plant shutdown was suspended. Additionally, further tests were conducted on the Vacuum Breaker Relief Valves (CV-13 and CV-14) to assure valve operability and to enhance surveillance

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procedure technique. Upon confirmation of the technique, including verification that the valves were properly seated, management restrictions on plant operation were removed.

Further corrective action to be taken includes a change to Surveillance Procedure 6.2.5.1, "Suppression Chamber - Reactor Building Vacuum Breakers Calibration And Functional Test", to prescribe the technique to be employed during operability testing and to verify that the wafer check valves are closed following demonstration of their operability.

G. Past Similar Events

None.



Nebraska Public Power District

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CNSS876074

September 15, 1987

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Dear Sir:

Cooper Nuclear Station Licensee Event Report 87-019 is forwarded as an attachment to this letter.

Sincerely,

G. K. Horn
Division Manager of
Nuclear Operations

GRH:ya/lb

Attachment

cc: R. D. Martin
L. G. Kuncl
K. C. Walden
C. M. Kuta
INPO Records Center
ANI Library

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