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REGION 2, ATLANTA, OFFICE OF THE DIRECTOR

SUBJECT: LER 79-010/03L-0 ON 790423:RB GASEOUS RADIATION MONITORS MADE INOPERABLE WHEN CONTAINMENT ISOLATION VALVE ON MONITOR INLET LINE FAILED,CAUSED BY RUPTURED OPERATOR DIAPHRAGM. CONSIDERING PROGRAM TO CHECK DIAPHRAGM WEAR.

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DUKE POWER COMPANY
OCONEE UNIT 3

Report Number: RO-287/79-10

Report Date: May 23, 1979

Occurrence Date: April 23, 1979

Facility: Oconee Unit 3, Seneca, South Carolina

Identification of Occurrence: Reactor Building Gaseous Radiation Monitors Inoperable

Conditions Prior to Occurrence: 100% Full Power

Description of Occurrence:

At 1523 on April 23, 1979, valve PR-8, the containment isolation valve outside the Reactor Building (RB) for the RB gaseous radiation monitor inlet line, failed closed, rendering the RB particulate, iodine, and gaseous activity monitors inoperable. Routine testing of Engineered Safety (ES) valves was being conducted, and valve PR-8 had been successfully tested at 1503. At 1523 problems were encountered in testing two other ES valves operated by the power supply which also provides power to valve PR-8, so an attempt was made to cycle valve PR-8 to verify that the power supply was functioning properly. However, valve PR-8 failed to reopen after closing, and its failure was not discovered until approximately 2100. The delay in discovery was primarily due to concern for testing the other two valves, coupled with the fact that the monitor line flow alarm had previously been actuated as a result of maintenance being performed on one of the monitors. The two block valves downstream from valve PR-8 and the redundant ES valve for the inlet line inside the Reactor Building were closed in order to assure containment isolation while the valve was being repaired. The valve was repaired, tested, and declared operable by 0015 on April 25, returning the RB radiation monitors to operability.

Apparent Cause of Occurrence:

The RB activity monitors were rendered inoperable when one of the containment isolation valves for the monitors' inlet line failed closed. Examination of the valve revealed that its operator diaphragm had ruptured, causing the failure. Further investigation indicated that the diaphragm was approaching the end of its expected service life.

Analysis of Occurrence:

The RB activity monitors provide a radiation-sensitive means for detecting reactor coolant system (RCS) leakage. Oconee Nuclear Station Technical Specification 3.1.6.8 permits the monitors to be removed from service for up to 48 hours provided that at least two other leak detection systems are operable. The monitors were returned to operability well within the required time, and during the time they were out of

service RB normal sump level and RCS inventory volume measurements were available to detect any leakage. In addition, valve PR-8 failed in the closed position, so its failure did not affect the ability to achieve containment isolation. Therefore, although the inoperability of the monitors constituted operation of the unit in a degraded mode permitted by a limiting condition for operation, and must therefore be reported pursuant to Technical Specification 6.6.2.1.b(2), this incident was of no significance with respect to safe operation of the unit. Therefore, the health and safety of the public were not endangered.

Corrective Action:

The block valves and redundant ES valve were closed to ensure isolation of the RB gaseous monitor inlet line prior to initiating repair of valve PR-8. Disassembly of the valve revealed that a ruptured operator diaphragm had caused its failure. In addition to the diaphragm, all valve parts subject to wear were replaced. The valve was tested and determined to be functioning properly prior to being declared operable. Consideration is being given to adding to the preventive maintenance program a review of valve diaphragms to determine which are in need of replacement.

NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: [| | | | | |] (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1	S C N E E 3 (2)	0 0 - 0 0 0 0 0 - 0 0 (3)	4 1 1 1 1 (4)	(5)
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0 1	REPORT SOURCE	L (6)	0 5 0 0 0 2 8 7 (7)	0 4 2 3 7 9 (8)	0 5 2 3 7 9 (9)
		(60)	DOCKET NUMBER (61–68)	EVENT DATE (69–74)	REPORT DATE (75–80)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 The RB gaseous radiation monitors were rendered inoperable when a containment
0 3 isolation valve on the monitors' inlet line failed closed. The valve was
0 4 repaired and the monitors were returned to operability well within the time
0 5 allowed by Technical Specification 3.1.6.8. In addition, two other means for
0 6 detecting RCS leakage were available. Therefore, this incident was of no
0 7 significance with respect to safe operation of the unit, and the health and
0 8 safety of the public were not endangered.

0 9	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
	B B (11)	E (12)	F (13)	V A L V E X (14)	D (15)	D (16)

(17) LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	7 9	—	0 1 0	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
A (18)	X (19)	Z (20)	Z (21)	0 0 0 0	Y (23)	Y (24)	L (25)	I 2 0 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The valve failed due to a ruptured operator diaphragm. The diaphragm was
1 1 approaching the end of its expected service life. The diaphragm and all other
1 2 valve parts subject to wear were replaced, and the valve was tested and declar-
1 3 ed operable. Consideration is being given to a program for reviewing valve
1 4 diaphragms to identify those in need of replacement.

1 5	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
	E (28)	1 0 0 (29)	NA	A (31)	Operator Observation

1 6	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
	Z (33)	Z (34)	NA	NA

PERSONNEL EXPOSURES

1 7	NUMBER	TYPE	DESCRIPTION (39)
	0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

1 8	NUMBER	DESCRIPTION (41)
	0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

1 9	TYPE	DESCRIPTION
	Z (42)	NA

PUBLICITY

2 0	ISSUED	DESCRIPTION (45)	NRC USE ONLY
	N (44)	NA	

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