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 AUTH. NAME AUTHOR AFFILIATION
 LEWIS, S. R. Duke Power Co.
 RECIP. NAME RECIPIENT AFFILIATION
 Region 2, Atlanta, Office of the Director

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SUBJECT: LER 79-023/03L-0 on 790718: penetration room ventilation sys
 declared inoperable because of high humidity. Caused by steam
 leakage during once-through generator blowdown. Leaks
 repaired & operability verified.

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DUKE POWER COMPANY
Oconee Unit 1

Report Number: RO-269/79-23

Report Date: August 17, 1979

Occurrence Date: July 18, 1979

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: Penetration Room Ventilation System Inoperable

Conditions Prior to Occurrence: RCS Heatup: 420°F, 1400 psig

Description of Occurrence:

At 2355 on July 18, 1979, Unit 1 was in a heatup mode when the Penetration Room Ventilation System (PRVS) was declared inoperable as a result of high humidity in the east penetration room. Blowdown of the once-through steam generators (OTSG's) was being performed as a result of high silica concentration, and it was discovered that steam was leaking past the seat of relief valve FDW-295 on the old OTSG wet layup chemical addition tank. As a result of the steam leakage, the humidity in the east penetration room was approximately 94%. The PRVS is considered inoperable when penetration room humidity is above 70%. OTSG blowdown was stopped, and penetration room humidity was reduced to approximately 67.5% by 1110 on July 19. Valve FDW-295 was repaired, and OTSG blowdown resumed, but penetration room humidity remained at approximately 67%. At 1314 on July 20, 1979, the PRVS Filter Test was initiated, and it was completed at 1530, verifying PRVS operability. However, at 1624 on July 20, high humidity was again observed as a result of another steam leak. Penetration room humidity was determined to be approximately 97%, and the PRVS was again declared inoperable. OTSG blowdown was again stopped to eliminate the leakage. At 2015 the PRVS inlet valves were closed in order to protect the PRVS filters from moisture damage. The valves were reopened at 2330, with penetration room humidity at 71%. By 0605 on July 21 penetration room humidity was 65%, and the PRVS Filter Test was again performed. At 1008 the test was successfully completed, and the PRVS was declared operable. The unit remained in a hot shutdown condition throughout this period, and was not made critical until after PRVS operability was verified.

Apparent Cause of Occurrence:

The PRVS was declared inoperable on two occasions as a result of high penetration room humidity. The high humidity was the result of steam leakage from the relief line on the old OTSG wet layup chemical addition tank during OTSG blowdown.

Analysis of Occurrence:

The function of the PRVS is to retain some of the iodine released in the unlikely event of a loss-of-coolant accident (LOCA). Oconee Nuclear Station Technical Specification 3.15 requires that a unit be shutdown within 12 hours after the PRVS is inoperable. Since the PRVS filters are not designed to operate properly under high humidity conditions, the PRVS is considered inoperable whenever penetration room humidity exceeds 70%. These incidents must

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therefore be reported pursuant to Technical Specification 6.6.2.1.b(2), which concerns a shutdown required by a limiting condition for operation. However, since it can be shown that offsite releases during a LOCA would still be well within the guidelines of 10CFR100 without PRVS operation, and since the unit was in a hot shutdown condition at the time of the incidents, this occurrence is considered to be of no significance with respect to safe operation, and the health and safety of the public were not affected.

Corrective Action:

The immediate corrective action each time was to secure OTSG blowdown, removing the source of the high humidity. The steam leaks were then repaired. A test was performed after each occurrence to verify PRVS operability. In order to monitor humidity conditions more closely, sight glasses will be added to the PRVS drainlines, and consideration is being given to installing humidity sensors in the penetration rooms. In addition, dampers will be installed on the PRVS inlet lines to prevent natural draft from carrying moisture through the system.

LICENSEE EVENT REPORT

EXHIBIT A

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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10																			
02		On July 18 and July 20, 1979, the Penetration Room Ventilation System (PRVS)																	
03		was declared inoperable as a result of high humidity in the east penetration																	
04		room. Since it can be shown that PRVS operation is not required to limit																	
05		offsite doses to within 10CFR100 guidelines during a design-basis accident,																	
06		and since the unit was in a hot shutdown condition during the time the PRVS																	
07		was inoperable, this incident is considered to be of no significance with																	
08		respect to safe operation, and the health and safety of the public were not																	
7		affected.										80							
09		SYSTEM CODE S H 11 CAUSE CODE X 12 CAUSE SUBCODE Z 13 COMPONENT CODE Z Z Z Z Z Z Z 14 COMP. SUBCODE Z 15 VALVE SUBCODE Z 16										80							
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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27																			
10		The excessive humidity was due to steam leakage during OTSG blowdown. The																	
11		leaks were repaired and PRVS operability was verified each time. Penetration																	
12		room humidity will be monitored more closely in the future, and dampers will																	
13		be added to the PRVS inlets to prevent natural draft from carrying moisture																	
14		through the system.																	
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PHONE: (704) 373-8285																			