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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report 50-368/95-004-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv), enclosed is the subject report concerning a Control Room Emergency Ventilation System actuation.

Very truly yours,

Dwight C. Mims
Director, Nuclear Safety

DCM/dc

enclosure

300063

9511010143 951025
PDR ADOCK 05000368
S PDR

cc: Mr. Leonard J. Callan
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U. S. Nuclear Regulatory Commission
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), 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) Arkansas Nuclear One - Unit 2	DOCKET NUMBER (2) 05000368	PAGE (3) 1 OF 5
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TITLE (4) Control Room Emergency Ventilation System Actuation Due to Elevated Background Radiation Levels Which Resulted From the Failure to Fully Consider the Potential Effects of Performing an Evolution Known to Produce Elevated Airborne Levels

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
09	26	95	95	004	00	10	25	95	Arkansas Nuclear One-Unit 1	05000313
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 5/N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)									
POWER LEVEL (10) 0/100	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	70.71(b)					
	20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	70.71(c)					
	20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER					
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Specify in					
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	Abstract Below					
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	and in Text					

LICENSEE CONTACT FOR THIS LER (12)

NAME Dee Cantwell, Nuclear Safety and Licensing Specialist	TELEPHONE NUMBER (Include Area Code) 501-858-5589
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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)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)		NO	<input checked="" type="checkbox"/>				

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

On September 26, 1995, Operations personnel began to fill and cool down the pressurizer in preparation for draining the Reactor Coolant System into reduced inventory. Containment ventilation was in service with the exhaust fan running and the supply fan secured to ensure a negative differential pressure at the open containment equipment hatch. The personnel hatch interlocks had been defeated to allow simultaneous opening of the inner and outer doors to facilitate access to the Containment Building from the Auxiliary Building. The pressurizer fill evolution commenced at approximately 0200. The quench tank was aligned to vent to the containment sump. At 0254, the pressurizer high point vent and the pressurizer vent header isolation valves to the quench tank were opened to align the pressurizer steam space to the quench tank. At 0316, the Control Room Emergency Ventilation System (CREVS) actuated as a result of the transfer of air containing noble gases from the Containment Building to the Auxiliary Building via the open personnel hatch. The CREVS was actuated by elevated background levels in the vicinity of the Unit 2 radiation monitor located in the Auxiliary Building. This event was due to the failure to fully consider the potential effects of performing an evolution known to produce elevated airborne levels with the existing ventilation lineup. Procedures were revised to require verification that containment personnel hatch interlocks are in place prior to collapsing the pressurizer bubble.

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

A. Plant Status

At the time this event occurred, Arkansas Nuclear One, Unit 2 (ANO-2) was in cold shutdown during Refueling Outage 2R11. The Containment Building Ventilation [VA] was running and both the equipment and personnel hatches were open. Reactor Coolant System (RCS)[AB] temperature and pressure were 116 degrees and 115 psia respectively. Pressurizer [AB] temperature was approximately 330 degrees. Pressurizer high point vents were open and the pressurizer was being filled in preparation for RCS draindown.

Arkansas Nuclear One, Unit 1 (ANO-1) was operating at 100 percent full power.

B. Event Description

On September 26, 1995, at 0316, the Control Room Emergency Ventilation System (CREVS) was actuated due to an increase in airborne activity and background radiation on level 386 of the Auxiliary Building.

The CREVS for ANO-1 and ANO-2 combined Control Room consists of two redundant filter trains, both of which are located outside the ANO-1 section of the Control Room. Each filter train includes a centrifugal fan, roughing filter, absolute filter, and charcoal adsorbent. In addition to recirculation and filtration of Control Room air, filtered outside makeup air is also provided to pressurize the Control Room to minimize unfiltered air inleakage into the Control Rooms under isolated conditions. The CREVS trains are normally isolated from the Control Room by isolation dampers. An area radiation monitor located in the ANO-1 Control Room area and a process radiation monitor in the ANO-2 normal ventilation system outside air intake ductwork located in the Auxiliary Building are provided to actuate the CREVS automatically upon detection of high radiation. Chlorine detectors are also provided in the ventilation system. In the event of detection of high radiation or high chlorine concentration, the normal Control Room air ventilation systems of both Unit 1 and Unit 2 are automatically isolated and the CREVS is automatically started.

On September 26, 1995, operations personnel began to fill and cool down the pressurizer in preparation for draining the RCS into reduced inventory. The initial containment purge had been completed and containment ventilation was in service with the exhaust fan running and the supply fan secured. The personnel hatch interlocks had been defeated to allow simultaneous opening of both the inner and outer hatch doors to facilitate egress from controlled access. Both the equipment hatch and personnel hatch were open and two containment coolers were in service with their respective bypass dampers open. The general flow of air was from the equipment hatch inward and upward to the inlet vents on the containment exhaust ventilation ducting. With the containment cooler bypass dampers open, air was drawn from the

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immediate vicinity of each cooler instead of from the supply ducting. With the existing negative differential pressure between the Auxiliary Building and the Containment Building, a portion of the air flow was transferred out through the personnel hatch. Air flow direction indicator flags installed at the containment equipment hatch indicated flow into the Containment Building from outside throughout this event.

The pressurizer fill evolution commenced at approximately 0200 from an initial pressurizer level of 38 percent using a single charging pump. In accordance with procedure, the charging pump was aligned to fill the pressurizer via the auxiliary spray header and the quench tank was aligned to vent to the containment sump.

At 0254, pressurizer pressure had decreased below 50 psia. The pressurizer high point vent and the pressurizer vent header to the quench tank isolation valves were opened to align the pressurizer steam space to the quench tank. As expected for this evolution, containment ventilation exhaust radiation monitor readings were observed to begin trending upward from a steady state level of approximately 100 cpm. At 0316, the CREVS actuated and the Control Room Isolation/Actuation Trouble annunciator alarmed in the Control Room. Operations personnel verified that both the ANO-1 and ANO-2 Control Room ventilation envelopes were isolated and noted that the ANO-2 Control Room ventilation radiation monitor was indicating between 300 and 400 cpm, which is greater than the actuation setpoint of 240 cpm.

Immediately prior to the control room ventilation isolation several friskers located on the level 386 of the Auxiliary Building alarmed with area readings as high as 2000 cpm. At 0322, in response to the alarms, Health Physics (HP) personnel closed the outer door of the personnel hatch. The Control Room ventilation radiation monitor began trending downward immediately after the door was closed. The pressurizer fill and cool down evolution was temporarily secured.

Airborne activity in the Auxiliary Building was monitored and removed via the normal ventilation system. At 0500, with radiation monitor readings at approximately 100 cpm, the Control Room ventilation radiation monitor was reset and Control Room ventilation was restored to its normal recirculation lineup. Operations personnel recommenced filling the pressurizer and at 0614 the pressurizer was filled and vented to atmosphere without further incident.

The maximum level noted on the Control Room ventilation radiation monitor indicator was approximately 450 cpm. A review of the chart recorder showed that levels reached approximately 600 cpm after the actuation.

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C. Root Cause

The cause of this event was the transfer of air containing noble gases from the Containment Building to the Auxiliary Building via the open personnel hatch. In addition, a fire door located in the hallway to the Upper South Electrical Penetration room was found partially open allowing an increased outflow of air to the Auxiliary Building. The Control Room ventilation radiation monitor responded to the increase in background levels resulting in the CREVS actuation.

The root cause of this event was determined to be a failure to fully consider the potential effects of performing an evolution known to produce elevated airborne levels with the existing ventilation lineup.

Contributing to the event was the failure to apply self-checking to ensure the expected response of the fire door located in the hallway to the Upper South Electrical Penetration Room. The door closure mechanism is not designed to close the door against differential pressure, but is designed to remain closed when shut. Had this door been latched in order to meet its fire barrier function, radiation levels in the Auxiliary Building might not have been sufficient to trip the Control Room ventilation radiation monitor.

D. Corrective Actions

Procedures were revised to require verification that containment personnel hatch interlocks are in place prior to collapsing the pressurizer bubble, thereby preventing the simultaneous opening of both the inner and outer doors.

Other evolutions having the potential to increase containment airborne levels were evaluated. Applicable procedures were revised to require verification that containment personnel hatch interlocks are in place prior to performing these evolutions.

Instruction was provided to ANO and contractor personnel reemphasizing the need to ensure that fire doors latch upon closure.

Unit 1 evolutions having the potential to increase containment airborne levels will be evaluated for similar vulnerabilities by March 31, 1996.

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E. Safety Significance

The CREVS actuated as designed and the ANO-1 Control Room area radiation monitor indication remained essentially constant at approximately 0.15 mR/hr throughout this event. Peak airborne levels in the Auxiliary Building were measured at <0.1 percent Derived Air Concentration equivalent iodine. Therefore, this event was of low safety significance.

F. Basis for Reportability

A report within four hours of discovery, followed by a written report within 30 days, is required by 10CFR50.72(b)(2)(ii) and 10CFR50.73(a)(2)(iv) respectively of "Any event or condition that results in a manual or automatic actuation of any engineered safety feature...." This condition was reported to the NRC Operation Center at 0430 on September 26, 1995.

G. Additional Information

No other similar occurrences requiring a Licensee Event Report were identified concerning actuation of the Control Room Ventilation System due to elevated background radiation levels.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].