



December 13, 1991

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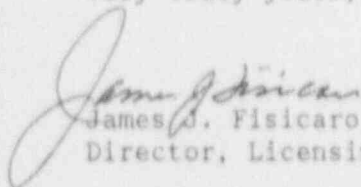
U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
Licensee No. DPR-51
Licensee Event Report 50-313/91-013-00

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,


James J. Fisicaro
Director, Licensing

IJF/EKH/sjf

Enclosure

cc:

Regional Administrator
Region IV
U. S. Nuclear Regulatory Commission
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Handwritten initials/signature

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Arkansas Nuclear One, Unit One

DOCKET NUMBER (2) PAGE (3)
05000313 1OF04

TITLE (4) Automatic Actuation of the Control Room Emergency Ventilation System Due to a Valid Radiation Signal Which Resulted From Leakage From a Letdown Filter Drain Valve

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)		
1	1	1991	1991	01	0	1	2	1991	AKO-2		0500031368		

OPERATING MODE (9) THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10)	1	0	0	20.402(b)	20.405(c)	X	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
				20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Abstract below and
				20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	in Text, NRC Form
				20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	366A)

LICENSEE CONTACT FOR THIS LER (12)

Name	Telephone Number
Elizabeth K. Holbert, Nuclear Safety and Licensing Specialist	Area Code: 501-964-5000

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

Cause	System	Component	Manufacturer	Reportable to NUREG	Cause	System	Component	Manufacturer	Reportable to NUREG

SUPPLEMENT REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)	Month	Day	Year
<input type="checkbox"/> Yes (If yes, complete Expected Submission Date) <input checked="" type="checkbox"/> No			

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

On November 13, 1991 at 1307, an automatic actuation of the Control Room Emergency Ventilation System was initiated by 2RE-8750-1, which is a radiation monitor located in the Control Room ventilation intake ductwork. At the time of the actuation, the Control Room Ventilation System was lined up in the recirculation mode with the supply isolation damper manually closed. The supply and exhaust fans, which are normally secured when the Control Room is automatically isolated, were in service supplying ventilation to the Computer Room. At 1022, the Reactor Coolant System (RCS) developed a small leak from a filter drain valve. This leak was stopped at 1034. At 1253, the Penetration Room Exhaust System, which draws from the filter room where the leak was located, was placed in service. This system exhausts downward through a U-shaped ventilation exhaust pipe (gooseneck) located on the side of the containment building that is oriented toward the Control Room normal ventilation intake duct. The most likely cause of this event was the entry of high airborne activity from the letdown filter drain valve through the gooseneck into the intake ductwork. The back pressure on the Control Room ventilation supply damper created by the ventilation system lineup caused the damper to leak and created a flowpath for the high activity to the radiation monitor.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)					
		Year		Sequential Number		Revision Number							
Arkansas Nuclear One, Unit One	05000313	9	1	--	0	1	3	--	0	0	02	CF	04

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

A. Plant Status

At the time this event occurred, Arkansas Nuclear One Unit 1 (ANO-1) and Arkansas Nuclear One Unit 2 (ANO-2) were operating at approximately 100 percent power.

B. Event Description

On November 13, 1991, at approximately 1307 hours, an actuation of the Control Room Emergency Ventilation System (CREVS) [IV] occurred.

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. 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 and the supply and exhaust fans are stopped.

Two quick acting chlorine detectors (2CLS-8760-2 and 2CLS-8761-1) are provided at the normal ventilation system supply duct for ANO-1 and two detectors (2CLS-8760-2 and 2CLS-8761-1) at the ANO-2 supply air duct. Any one of these detector signals will initiate operation of the CREVS. Additionally, radiation monitors RE-8001 (an area radiation monitor located in the ANO-1 Control Room area) and 2RE-8750-1 (a process radiation monitor located in the ANO-2 normal ventilation system outside air intake ductwork) are provided to actuate the CREVS automatically upon detection of high radiation. If either one of these radiation monitors detects radiation levels above predetermined values, the CREVS will be automatically actuated.

At the time of the CREVS actuation, the Control Room ventilation system was lined up in the recirculation mode with the Control Room supply isolation damper manually closed. The Control Room ventilation supply fan (2VSF-8) and the exhaust fan (2VEF-43), which are normally secured when the Control Room is isolated, were in service supplying ventilation to the Computer Room.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	INCIDENT NUMBER (2)	LER NUMBER (6)						PAGE (3)
		Year		Sequential Number		Revision Number		
Arkansas Nuclear One, Unit One	05000313	91	--	013	--	00	03	

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

At 1307, process radiation monitor 2RE-8750-1, whose detector is located in the ductwork upstream of the Control Room supply isolation damper, reached its trip setpoint of 160 counts per minute (cpm) and actuated the CREVS, which automatically secured the normal ventilation supply and exhaust fans and isolated the ANO-1 Control Room. The radiation monitor returned to its background radiation level readings immediately after the actuation and was reset. The Control Room Ventilation System was returned to normal configuration at 2251 hours.

C. Root Cause

At 1022, on November 13, while shifting Reactor Coolant System (RCS) [AB] letdown filters, a small RCS leak (approximately 1.5 gpm) developed from one of the filter drain valves. The leak was isolated at 1034. At 1253, the Penetration Room Exhaust System [VF], which draws from the area around the filter room where the leak was located, was placed in service. This system exhausts downward through a U-shaped ventilation exhaust pipe (gooseneck) located on the side of the containment building at a velocity of approximately 2500 feet per minute. The gooseneck discharge is located approximately 30 feet horizontally and 84 feet above the Control Room normal ventilation intake duct. Under unique meteorological conditions, it is plausible that this discharge could be drawn into the Control Room ventilation intake. Because of the ventilation lineup to the Computer Room, a static back pressure was created on the Control Room supply isolation damper which is designed to seal with a positive pressure on the Control Room side of the damper. This back pressure condition could cause the isolation damper to leak and allow airborne radiation to reach the detector. Although not conclusively proven, this flowpath may have contributed to the CREVS actuation.

Therefore, the probable root cause of this event is considered to be the small RCS leakage from the letdown filter drain valve.

D. Corrective Actions

Since the circumstances of this event are unique and there have been no previous actuations of CREVS from this source, no corrective actions associated with orientation between the gooseneck and Control intake are planned.

E. Safety Significance

The Control Room Emergency Ventilation System was automatically isolated due to a valid high radiation signal. The radiation levels in the Control Room were returned to normal (60 cpm) shortly after the isolation, thus posing no radiological safety hazard. An evaluation was performed which verified that the radioactive release associated with this event was well below 10⁻⁶ R20 limits.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

The CREVS equipment functioned as designed. When the Control Room is isolated by a valid CREVS actuation, static pressure prevents flow by the isolation damper into the Control Room thus providing design protection of personnel.

This event is, therefore, judged not to be safety significant.

F. Basis for Reportability

This event is considered reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic actuation of an Engineered Safety Features System.

This event was also reported in accordance with 10CFR50.72(b)(2)(ii) at 1430 hours on November 13, 1991.

G. Additional Information

A similar event in which a valid high radiation signal caused a CREVS actuation, was reported in LER 50-313/91-012-00. However, the two events are not directly related since the manner in which the radiation entered the Control Room Ventilation System differs.

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