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U. S. Nuclear Regulatory Commission

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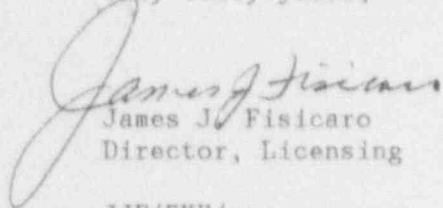
Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Licensee Event Report 50-313/91-012-00

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

JJF/EKH/mmg

Enclosure

cc: Regional Administrator
Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

INPO Records Center Suite 1500
1100 Circle, 75 Parkway
Atlanta, GA 30339-3064

12/27/91

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Arkansas Nuclear One, Unit One

DOCKET NUMBER (2) PAGE (3)
050003 131 OF 04

TITLE (4) Automatic Actuation of the Control Room Emergency Ventilation System During Ventilation System Maintenance Caused by High Airborne Activity Which Resulted From an Inadequate Pre-job Evaluation

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	1	9	1	0	1	2	1	1	9	1	0	5	0	0	3	6	8
1	1	1	9	1	0	1	2	1	1	9	1	0	5	0	0			

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

POWER LEVEL	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	Other (Specify in Abstract below and in Text, NRC Form 366A)
(10) 100																					

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 NRC	Cause	System	Component	Manufacturer	Reportable to NRC

SUPPLEMENT REPORT EXPECTED (14)

Yes (If yes, complete Expected Submission Date)	No	EXPECTED SUBMISSION DATE (15)	Month	Day	Year
	X				

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

On November 11, 1991 an actuation of the Control Room Emergency Ventilation System (CREVS) occurred during the performance of maintenance to change the filters on the Radwaste Area Exhaust Ventilation System. On November 11, 1991 at 2035, workers entered the ventilation system air handler to begin changing the prefilters. Approximately 20 seconds after opening the door to the air handler, the Continuous Air Monitor began to alarm. At 2059, replacement of the prefilters was stopped and the door to the air handler was closed. The Control Room isolation occurred at 2100 hours when the count rate on the Control Room ventilation radiation monitor exceeded its alarm setpoint of 160 counts per minute (cpm). The Control Room radiation monitor indication quickly returned to approximately 60 cpm after the isolation. The high activity in the air handler was most likely caused by back leakage through the air handler inlet damper of fission gases introduced into the system by the Condenser Vacuum System. The fission gases were then drawn into the Control Room ductwork through existing pitot tube traverse access ports, seams or joints in ductwork and/or leaking gaskets in equipment, thus causing the Control Room isolation. Procedures were revised to ensure that the condenser vacuum pumps are aligned to draw from the separator tank during isolation of the Radwaste Area Exhaust Ventilation System fans.

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	91	--	01	2	--	00	02 OF 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 11, 1991, at approximately 2100 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 leakage 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.

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, maintenance was being performed to change filters on the ANO-2 Radwaste Area Exhaust Ventilation System [VF]. The air handler for the exhaust fans for this system (2VEF-8A, 2VEF-8B) contains 26 prefilters and 36 HEPA filters arranged in a bank. The air handler is also equipped with inlet and outlet damper.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

On November 11, 1991 at 1758 hours exhaust fans 2VEF-8A and 2VEF-8B were secured for replacement of the prefilters and HEPA filters. At 2035 workers opened the door and entered the air handler to begin changing the prefilters. Approximately 20 seconds after opening the door to the air handler the Continuous Air Monitor (CAM) began to alarm. A Health Physics technician who was covering the job then started an air sample and notified the Health Physics office of the CAM alarm. At 2059, replacement of the prefilters was stopped and the door to the air handler was closed.

The Control Room isolation occurred at 2100 hours when the count rate on the Control Room ventilation radiation monitor, 2RE-8750-1, exceeded its alarm setpoint of 160 counts per minute (cpm). The background count rate is normally between 50 and 80 cpm. The highest reading observed was approximately 200 cpm. When the high radiation signal was received, the Control Room isolation dampers closed and the emergency filtration and fan unit 2VSF-9A automatically started. The Control Room radiation monitor indication quickly returned to approximately 60 cpm after the isolation. Radiation monitor, 2RE-8750-1, was reset at 2150 hours and the Control Room Ventilation System was returned to normal mode on November 12, 1991 at 0731 hours.

C. Root Cause

Effluent from the Component Cooling Water Surge Tanks [CC], the Gaseous Radwaste System [WE], Condenser Vacuum Pump Discharge [SH], and the Boron Management Holdup Tank (2T-12) [WD] relief vents discharge to the Radwaste Area Exhaust Ventilation System [VF]. A study of the isotopes present in the air samples taken at the air handler doorway just prior to the CREVS actuation revealed a close comparison to the isotopes present in the Condenser Vacuum System. The isotopes present in the Condenser Vacuum System are mostly fission gases and their daughter products.

It has been determined that the high activity in the 2VEF-8A/B air handler was most likely caused by back leakage through the air handler inlet damper, which is not designed as an air tight damper, of fission gases introduced into the system from the Condenser Vacuum System. The fission gases were then drawn into the Control Room ductwork through existing pitot tube traverse access ports, seams or joints in ductwork and/or leaking gaskets in equipment, thus causing the Control Room isolation.

The root cause for the Control Room isolation was failure to identify potential input sources from the system prior to beginning work. The personnel involved in Planning and the Radiological Safety Evaluation process, which was performed relative to the subject maintenance activity, were not aware of the Condenser Vacuum System discharging to the Radwaste Area Ventilation System.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

D. Corrective Actions

On November 12, 1991, the discharge flow of the condenser vacuum pump was reduced by aligning the condenser vacuum pump to draw from the separator tank instead of the atmosphere. The filter changeout was then completed without incident.

Procedures were revised to ensure that the Unit 2 condenser vacuum pumps are aligned to draw from the separator tanks instead of from the atmosphere and that boron management holdup tanks (2T-12A/B/C/D) are secured during isolation of exhaust fans 2VEF-8A and 2VEF-8B.

After reviewing the Radiological Safety Evaluation process, it has been determined that the evaluation process is adequate. However, as an enhancement of the process, additional technical assistance from Operations and System Engineering will be obtained on similar evaluations.

In addition, individuals responsible for performing Radiological Safety Evaluations were counseled about the importance of obtaining assistance from Operations and/or Systems Engineering when performing Radiological Safety Evaluations.

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 less than 200 cpm and 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 10CFR20 limits. The CREVS equipment functioned as designed. This event is therefore judged not to be safety significant.

F. Basis For Reportability

This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic actuation of an Engineered Safety Features System. It was also reported pursuant 10CFR50.72(b)(2)(ii) to the Nuclear Regulatory Commission Operations Center on November 11, 1991 at 2125 hours.

G. Additional Information

There have been no previous reports associated with an actual high radiation signal causing Control Room Ventilation System isolation.

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