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U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Licensee Event Report No. 50-313/90-011-01

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv), attached is the subject report concerning the inadvertent actuation of the Control Room Emergency Ventilation System initiated by the tripping of a chlorine monitor which was most likely caused by radio frequency interference. This report is being supplemented to provide additional information related to corrective actions taken following occurrence of this event.

Very truly yours,

Dale E. James

for James J. Fisicaro
Manager, Licensing

JJF/LAT/mmg
Attachment

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

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IE22

NRC Form 366
Commission
(6-89)

U.S. Nuclear Regulatory

Approved OMB No. 3150-0104
Expires: 4/30/92

LICENSEE EVENT REPORT (LER)

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TITLE (4) Inadvertent Actuation of the Control Room Emergency Ventilation System Initiated by a Trip of a Chlorine Monitor Most Likely Caused by Radio Frequency Interference

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)
									ANO-2	0 5 0 0 0 3 6 8
0 9	3 0	9 0	9 0	-- 0 1 1	-- 0 1	0 3	2 9	9 1		0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)							
POWER LEVEL (10) 0 8 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 Abstract below and in Text, NRC Form 366A)
		___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	
		___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	Telephone Number (Area Code)
Larry A. Taylor, Nuclear Safety and Licensing Specialist	5 0 1 9 6 4 - 3 1 0 0

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

SUPPLEMENT REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	Month	Day	Year
___ Yes (If yes, complete Expected Submission Date)	X No				

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

On September 30, 1990, at approximately 0050, an unexpected actuation of the Control Room Emergency Ventilation System (CREVS) occurred. Investigation into the cause of the actuation revealed that chlorine monitor 2CLS-8762-2 was tripped. However, the immediate cause of the monitor trip could not be positively determined. Since no actual high chlorine condition existed, the monitor was reset and the Control Room ventilation lineup was returned to normal at 0058 hours. The most likely cause of the actuation was radio frequency interference (RFI) caused by the keying of a hand held radio in the vicinity of the monitor. However, the root cause of this event is directly related to system design. The extreme sensitivity of the chlorine monitors coupled with the actuation logic configuration, which requires only one monitor to trip in order to initiate the CREVS, makes the system highly susceptible to inadvertent actuations. Action has been completed to better mark areas in the plant where radio usage is prohibited. Additionally, an evaluation is being conducted to determine the feasibility of amending the Technical Specifications to delete requirements for the system chlorine monitors.

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

A. Plant Status

At the time of occurrence of this event, Arkansas Nuclear One, Unit 1 (ANO-1) was operating at approximately 80 percent of rated power. Arkansas Nuclear One, Unit 2 (ANO-2) was at approximately 25 percent of rated power.

B. Event Description

On September 30, 1990, at approximately 0050, an unexpected actuation of the Control Room Emergency Ventilation System (CREVS) [VI] occurred.

The CREVS for ANO-1 and ANO-2 combined Control Rooms 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 absorbent. In addition to recirculation and filtration of Control Room air, filtered outside makeup air is also provided to pressurize the Control Rooms 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 ANO-1 and ANO-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-8762-2 and 2CLS-8763-1) 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 automatically actuate CREVS upon detection of high radiation. If either one of these radiation monitors detects radiation levels above predetermined values, the CREVS will be automatically actuated.

Investigation into the cause of the actuation revealed that chlorine monitor 2CLS-8762-2 was tripped. However, the immediate cause of the monitor trip could not be positively determined. Since no actual high chlorine condition existed, the monitor was reset and the Control Room ventilation lineup was returned to normal at 0058 hours.

C. Root Cause

A review of previous actuations of the CREVS which were initiated by tripping of a chlorine monitor and conversation with the chlorine monitor vendor resulted in the determination that the most likely immediate cause of the most recent actuation was radio frequency interference (RFI) caused by the keying of a hand held radio in the vicinity of the monitor. However, the root cause of this event is directly related to system design. The extreme sensitivity of the chlorine monitors coupled with the actuation logic configuration, which requires only one monitor to trip in order to initiate the CREVS, makes the system highly susceptible to inadvertent actuations.

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

D. Corrective Actions

Due to previous actuations of the CREVS which were initiated by RFI induced tripping of the chlorine monitors, the area in the vicinity of the monitors was already posted to prohibit the use of radios. A memorandum was also issued to inform plant personnel of the effect of RFI on the chlorine monitors and to ensure that they are cognizant of the restriction on the use of radios in the area. However, since these actions were not sufficient to prevent the recurrence of similar events, additional measures were taken (i.e., painted bold stripes on floors) to improve personnel awareness of areas in the plant where radio usage is prohibited.

As a result of previous inadvertent CREVS actuations, several system enhancements were completed which have significantly reduced the frequency of recurring events (see LER 50-313/89-009-01). Additionally, an engineering evaluation of the system design was performed to determine if additional corrective actions were necessary. ANO has discontinued the use of chlorine as a biocide for chemical treatment of the service water systems and main condenser circulating water systems for both units at ANO. Chlorine gas cylinders stored on site and used for that purpose have been removed thereby eliminating the potential for a significant on site chlorine gas release which could affect control room habitability. Based on this factor, the engineering evaluation noted above recommended removal of the chlorine monitors from the CREVS actuation logic. Following occurrence of this system actuation, action was initiated to determine the feasibility of implementing the Engineering recommendation by amending the Technical Specifications (TS) to delete the current requirements for the system chlorine monitors. The necessary evaluations to develop a TS amendment request were initially anticipated to be completed by March 31, 1991. However, detailed reviews and calculations needed to address potential chlorine gas hazards from offsite sources has increased the original scope of the evaluations. The evaluations are now expected to be complete by April 30, 1991. Should the results indicate that an adequate basis exists to support removal of chlorine monitors from the TS, an appropriate amendment request will be developed and submitted and if approved the monitors will be removed from the CREVS actuation logic.

E. Safety Significance

Since no actual high chlorine concentration existed, and because the CREVS actuated as designed, there was no safety significance related to this event.

F. Basis For Reportability

This event is considered reportable pursuant to 10 CFR 50.73(a)(2)(IV) as the automatic actuation of an Engineered Safety Features system.

This event was also reported in accordance with 10 CFR 50.72(b)(2)(ii) on September 30, 1990.

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

G. Additional Information

Previous similar occurrences in which the CREVS was actuated by the spurious tripping of a chlorine monitor were reported in LERs 50-313/89-009-01, 50-313/89-011-00, 50-313/89/035-00, 50-313/89-036-00 and 50-313/89-042-01.

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