NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Fort Calhoun Station Unit No. 1	0 5 0 0 0 2 8 5	1 OF 0 4

TITLE (4)
RM-061 Inversion Switch Outside Design Basis

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)
											N	0 5 0 0 0
0 3	3 0	8 9	8 9	-	0 0 9	-	0 0	0 5	0 1	8 9		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)				
1		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	
1 0 0		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)	XX 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
Mark Hollingsed, Shift Technical Advisor	4 0 2 4 2 6 - 4 0 1 1

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)	X NO				

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

At 1300 hours on March 30, 1989, plant management of Fort Calhoun Station determined that a modification made to a radiation monitor cabinet in 1980 placed the plant outside its design basis. The condition was identified by an NRC inspector during a maintenance inspection. The plant was in mode 1 and operating at 100 percent power at the time of the determination.

A dual alarm setpoint switch connected to radiation monitor RM-061 (inside cabinet AI-33B) had not been seismically analyzed or supported when installed in 1980. Due to the location of the switch, it was postulated that during a seismic event, the switch and its mounting box could have become a missile with the potential for disabling 3 of the 5 radiation monitors (and power to the initiating relays) used in the generation of the Containment Radiation High Signal (CRHS). CRHS was declared inoperable at 1356 hours on March 30, 1989. The switch was removed under a temporary modification and CRHS was then declared operable again at 1915 hours on the same day. The temporary modification will be cleared by the installation of MR-FC-86-33.

In accordance with 10 CFR 50.72(b)(1)(ii)(B), the NRC Operations Center was notified at 1356 hours on the same day.

Improvements have been made to the design process and procedures since 1980 that have greatly reduced the potential for similar errors in the future.

IE22 1/1

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
For Calhoun Station Unit No. 1	0 5 0 0 0 2 8 5	8 9	— 0 0 9	— 0 0	0 2 OF 0 4

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

At 1300 hours on March 30, 1989, plant management of Fort Calhoun Station determined that a modification made to a radiation monitor cabinet in 1980 placed the plant outside its design basis. The condition was identified by an NRC inspector during a maintenance inspection. The plant was in mode 1 and operating at 100 percent power at the time of the determination.

In accordance with 10 CFR 50.72(b)(1)(ii)(B), the NRC Operations Center was notified at 1356 hours on the same day.

A dual alarm setpoint switch connected to radiation monitor RM-061 had not been seismically analyzed or supported when installed in electrical cabinet AI-33B in 1980. The switch was mounted in a box which rested loosely on an adjacent radiation monitor in the cabinet. Due to the location of the switch, it was postulated that during a seismic event, the switch and its mounting box could have become a missile with the potential for disabling 3 of the 5 radiation monitors (and power to initiating relays for the 5 monitors) used in the generation of the Containment Radiation High Signal (CRHS).

CRHS was therefore declared inoperable at 1356 hours on March 30, 1989. The switch was removed under a temporary modification and CRHS was then declared operable again at 1915 hours on the same day.

RM-061, which is the stack air particulate monitor, is one of 5 radiation monitors in a one-out-of-five initiation logic for the CRHS. The other monitors and their functions are as follows:

1) RM-050 containment particulate monitor
2) RM-051 containment gas monitor
3) RM-060 stack iodine monitor
4) RM-062 stack gas monitor

RM-060, -061, and -062 are the monitors and CRHS-initiating relays which could have been affected by the switch box during a seismic event. If any of the 5 monitors reaches its alarm setpoint, a CRHS will be actuated. The sole function of CRHS is to initiate a Ventilation Isolation Actuation Signal (VIAS). VIAS prevents the release of significant radioactive iodine or radioactive gas from the containment to the atmosphere by initiating closure of the containment pressure relief, air sample, and purge system valves. VIAS also initiates shedding of the containment purge fans, and places the control room ventilation in filtered air makeup.

As shown on the attached diagram, VIAS is also actuated by either a Containment Spray Actuation Signal (CSAS) or a Safety Injection Actuation Signal (SIAS).

CSAS is initiated upon receipt of both a Containment Pressure High Signal (CPHS) and a Pressurizer Pressure Low Signal (PPLS); SIAS is initiated by either a CPHS or a PPLS. Even though RM-060, RM-061, and RM-062 may not have been available to actuate CRHS during a seismic event, VIAS could have been actuated by: 1) both CPHS and PPLS actuating CSAS during a loss of coolant accident; or 2) either CPHS or PPLS actuating SIAS during a loss of coolant accident.

The switch had been installed so that higher alarm setpoints could be inserted into RM-061 during temperature inversions, when background radiation levels seen by the monitor are increased. Numerous nuisance VIAS actuations had occurred as a result of temperature inversions prior to installation of the switch.

Based on changes to the Technical Specifications in 1985, dual setpoints for RM-061 are no longer required. Technical Specification Amendment 86 allows calculation of the CRHS setpoints based on the site boundary dose rates, instead of being based on a maximum release rate. The changes significantly increased the setpoint for CRHS actuation on RM-061 so that an increase in background activity due to temperature inversions is no longer a concern. Therefore, the switch was no longer needed.

The failure to analyze for seismic considerations during the development of the 1980 modification can be attributed to inadequacies in the design process at the time. The potential for design errors of this type occurring in the future has been greatly reduced due to many subsequent improvements implemented in the design process. These improvements include multi-disciplinary reviews, and consideration of systems interactions including seismic interaction effects, design basis concerns, human factors review, materials compatibility, single failure criteria, operating impact, testing, and maintenance.

Errors of this type are being identified during reconstitution of the design bases for Fort Calhoun. As items are identified, they will be evaluated, corrected, and reported as appropriate.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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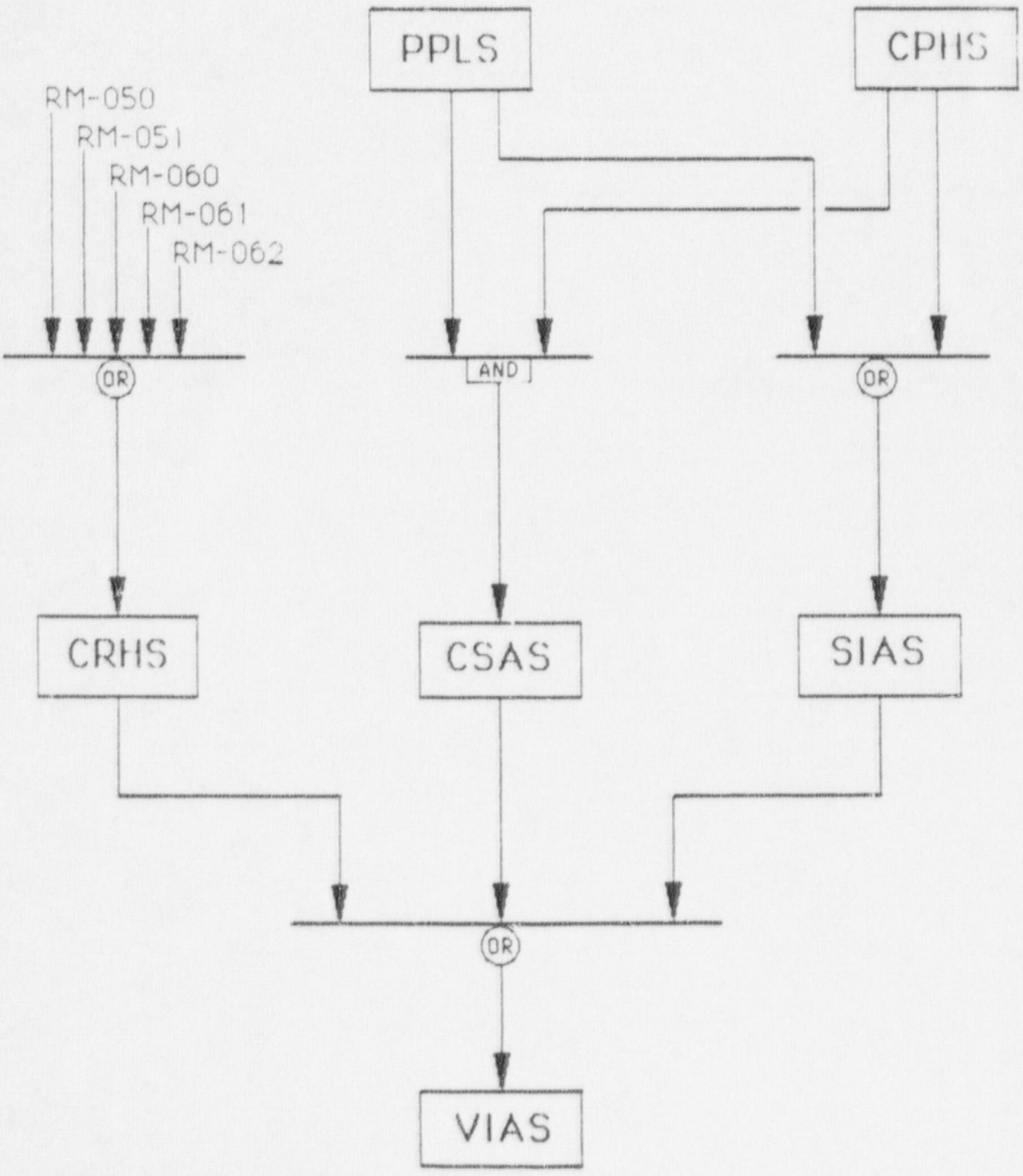
Fort Calhoun Station Unit No. 1	0 5 0 0 0 2 8 5	8 9	— 0 0 9	— 0 0	0 4 OF 0 4

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

VIAS ACTUATION LOGIC
LER 89-009



Omaha Public Power District
1623 Harney Omaha, Nebraska 68102-2247
402/536-4000

May 1, 1989
LIC-89 240

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Reference: Docket No. 50-285

Gentlemen:

SUBJECT: Licensee Event Report 89-009 for the Fort Calhoun Station

Please find attached Licensee Event Report 89-009 dated May 1, 1989. This report is being submitted per requirements of 10 CFR 50.73(a)(2)(ii)(B).

Sincerely,

K. J. Morris
Division Manager
Nuclear Operations

KJM/dm

Attachment

c: R. D. Martin, NRC Regional Administrator
P. D. Milano, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector
INPO Records Center
American Nuclear Insurers

IE22
1/1