Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247
402/636-2000

August 9, 1991
LIC-91-0094L

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 91-015 for the Fort Calhoun Station

Please find attached Licensee Event Report 91-015 dated August 9, 1991. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B). If you should have any questions, please contact me.

Sincerely,

W. G. Gates

W. G. Gates
Division Manager
Nuclear Operations

WGG/rkj

Attachment

c: R. D. Martin, NRC Regional Administrator
W. C. Walker, NRC Project Manager
R. P. Mullikin, NRC Senior Resident Inspector
INPO Records Center

NRC FORM 366A (5-92)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Fort Calhoun Station Unit No. 1

DOCKET NUMBER (2): 0 5 0 0 0 2 8 5

PAGE (3): 1 OF 0 4

TITLE (4): Radiation Monitor RM-060 Inoperable Due To Seismic Concern

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 7	1 0	9 1	9 1	— 0 1 5	— 0 0	0 8	0 9	9 1		0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

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

20.402(b)	20.405(c)	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)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)	
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: Doug S. Molzer, Shift Technical Advisor

TELEPHONE NUMBER: AREA CODE 4 0 2 — 5 3 3 - 1 6 8 9 4

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)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)

[X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

On July 10, 1991 at 1711 hours, Fort Calhoun Station Unit No. 1 personnel declared radiation monitor RM-060 (stack iodine) inoperable due to the flow totalizer located inside the RM-060 radiation monitor cabinet not being seismically mounted. Thus, plant operations entered into Technical Specification (TS) Limiting Conditions for Operation (LCO) 2.9.1(2)(e) and 2.15(2), Table 2-4, Item 3.

Modification work to seismically support the flow totalizer was completed. Seismically mounting the flow totalizer returned the radiation monitor to within the criteria of Appendix F of the Updated Safety Analysis Report (USAR). RM-060 was declared operable and all associated TS LCOs were cleared.

Although actions were immediately taken to rectify the condition upon its discovery, this condition has existed since the installation of the flow totalizer in 1977. During this period all other functional requirements for RM-060 were met, and no releases occurred with this monitor unavailable. However, because RM-060 would not have been available in a worst case scenario this event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B).

The primary cause of this event was the failure to analyze for seismic considerations during the development of the modification for installation of the flow totalizer in 1977. This can be attributed to inadequacies in the design process at the time. Corrective actions include seismically supporting the flow totalizer for RM-060 and previously implemented improvements to the modification control process.

At Fort Calhoun Station Unit No. 1, the Ventilation Isolation Actuation Signal (VIAS) is designed to mitigate a release of significant radioiodine and radioactive gas from the containment to the atmosphere from such sources as reactor coolant leaks. VIAS is initiated by a safety injection actuation signal (SIAS), a containment spray actuation signal (CSAS), or a containment radiation high signal (CRHS). The CRHS feature employs five radiation monitors taking samples from the containment and/or ventilation stacks. Those monitors are: RM-050 (containment particulate), RM-051 (containment gas), RM-060 (stack iodine), RM-061 (stack particulate), and RM-062 (stack gas). Activity detected above the setpoint of any one of these monitors will initiate a CRHS. The sole function of CRHS is to initiate a VIAS. VIAS initiates closure of the containment pressure relief, air sample, and purge system valves. It also initiates shedding of the containment purge fans, and places the control room ventilation system in filtered air makeup.

At Fort Calhoun Station (FCS) the Updated Safety Analysis Report (USAR) designates the radiation monitoring system as Seismic Class I. The system and components so designated must be designed to withstand the effects of a "Design Basis Earthquake" per the criteria established in Appendix F of the USAR.

On June 28, 1991 the Quality Assurance Group issued a Surveillance Report (B1-91-1) which evaluated the activities associated with Radioactive Liquid and Gaseous Monitoring. In the report a concern was raised as to whether the flow meter (flow totalizer) for radiation monitor RM-060 was seismically mounted in its radiation monitor cabinet.

Upon receiving the surveillance report the system engineer for the radiation monitoring system began an investigation to determine if the flow totalizer had been seismically analyzed and mounted. Engineering was requested to inspect the flow totalizer's as-installed configuration and evaluate its seismic qualification. After inspecting the installed configuration, Engineering concluded that in the event of an earthquake the flow totalizer could be damaged such that a loss of flow integrity would render RM-060 unreliable as a result of having inadequate flow for generation of CRHS.

Based on the results of this evaluation, RM-060 was declared inoperable on July 10, 1991 at 1711 hours. Thus, plant operations entered into Technical Specification (TS), Limiting Conditions for Operation (LCO) 2.9.1(2)(e) and 2.15(2), Table 2-4, Item 3. The specification requires that with the iodine radiation monitor inoperable releases from the gas decay tank, containment pressure relief line and containment purge line shall be secured. No releases were in progress at the time the monitor was declared inoperable.

On July 12, 1991 under Nonconformance Report (NCR 91-049), which was issued to document this event, modification work to seismically support the flow totalizer was initiated. Seismically mounting the flow totalizer returned the radiation monitor to within the criteria of Appendix F of the USAR. Following the completion of modification work and associated calibration procedures, RM-060 was declared operable on July 13, 1991 at 0125 and all associated Technical Specification LCOs were cleared.

Investigation revealed that the RM-060 flow totalizer was installed in 1977 under Design Change Request DCR 76-49. The flow totalizer was installed in an effort to provide a more accurate integrated flow volume for purposes of determining iodine activity released over the sampling period. The original installed rotameter indicated a flow rate which led to inaccurate estimates of total flow volume due to flow variance during the sampling period. The design and installation of the flow totalizer addressed the technical concerns of the unit for proper function and operation but failed to consider its seismic criteria.

Although actions were immediately taken to rectify the condition upon its discovery, this condition has existed since the installation of the flow totalizer in 1977. During this period all other functional requirements for RM-060 were met, and no releases occurred with this monitor unavailable. However, because RM-060 would not have been available in a worst case scenario this event is being reported pursuant to 10 CFR 50.73 (a)(2)(i)(B).

The safety significance of this event has been evaluated and determined to be minimal. RM-060 is one of five radiation monitors that are capable of initiating a VIAS, however, only RM-050 and RM-051 are required by the Technical Specifications for initiation of a VIAS. RM-060 is designed solely for Iodine monitoring and accountability. NUREG-0133 recommends removal of the VIAS function from iodine monitors due to spurious actuations. A review of semi-annual reports indicates that gas concentrations released are 10,000 times greater than concentrations of iodine, indicating the gas monitor would be the most probable initiator of VIAS. Ir addition, when the seismic concern of RM-060 was identified, at no time prior to its discovery did the seismic qualification of the flow totalizer prevent it from initiating a VIAS or affect its intended operation. Had an earthquake occurred that would have rendered RM-060 inoperable, any one of the other four radiation monitors could have initiated a VIAS, in addition to a pressurizer pressure low signal (PPLS) or a containment pressure high signal (CPHS) during a Loss of Coolant Accident (LOCA).

The primary cause of this event was the failure to analyze for seismic considerations during the development of the modification for installation of the flow totalizer in 1977. This can be attributed to inadequacies in the design process at the time. The potential of design errors occurring in the future are greatly reduced due to major improvements in the design process. Those improvements include multi-disciplinary reviews, system interactions including seismic considerations, design basis review, and operational interaction.

OPPD plans to upgrade the radiation monitors in modification MR-FC-84-155. As a result, the design bases and design criteria, including related open items identified during the design basis reconstitution for the radiation monitors will be evaluated and the modification will resolve any further seismic design concerns. The design work for MR-FC-84-155 is in progress. This modification is currently scheduled for implementation in a phased approach during 1992 and 1993.

Corrective actions associated with this event include the following:

1) The flow totalizer for RM-060 was seismically supported and documented in NCR 91-049. The completion of this work returned the radiation monitor to within the criteria of Appendix F of the USAR.

2) Improvements to the modification control process have since been implemented through Reference 65 of the Safety Enhancement Program "Revise FCS Modification Control Procedures", revisions to Standing Order G-21 "Modification Control", revisions to PED-GEI-3 "Preparation of Design Change Packages", and development of a Station Modification and Review Team (SMART). These improvements and the addition of a System Engineering Program at FCS have improved the quality of the modification packages and will preclude similar modification design inadequacies in the future.

This incident is similar to the event reported in LER 89-09. Both address the seismic qualification of components associated with the radiation monitors. It also concerned inadequacies in the design process for modification work.