



444 South 16th Street Mall
Omaha NE 68102-2247

LIC-08-0086
September 3, 2008

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Reference: 1) Docket No. 50-285
2) Letter LIC-08-0047 from T. R. Nellenbach to Document Control Desk,
dated May 14, 2008 (LER 2008-002 Rev. 0)

Subject: Licensee Event Report 2008-002 Revision 1 for the Fort Calhoun Station

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is a supplement to the subject report concerning loss of containment integrity due to a leaking isolation valve. The purpose of this supplement is to provide the results of the root cause analysis.

The attached LER includes the following regulatory commitments:

The Updated Safety Analysis Report (USAR) Section 5.9, "Structures Containment Penetrations" and associated figures and drawings will be reviewed and modified to uniquely identify containment penetration valves that are required for containment integrity, including annotation of automatic or non-automatic functioning. In addition, station operating procedure OI-CO-5, "Containment Integrity," will be modified to reflect the results of the USAR review.

If you should have any questions, please contact me.

Sincerely,

T. R. Nellenbach
Division Manager - Nuclear Operations

TRN/DKG/dkg
Attachment

c: E. E. Collins, NRC Regional Administrator, Region IV
M. T. Markley, NRC Senior Project Manager
J. D. Hanna, NRC Senior Resident Inspector
INPO Records Center

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Fort Calhoun Station	2. DOCKET NUMBER 05000285	3. PAGE 1 OF 3
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4. TITLE
Loss of Containment Integrity Due to a Leaking Isolation Valve

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTI AL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	15	2008	2008	- 002 -	01	08	15	2008	FACILITY NAME	05000

9. OPERATING MODE 03	<p>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: <i>(Check all that apply)</i></p> <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> 20.2201(b)</td> <td><input type="checkbox"/> 20.2203(a)(3)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(C)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)</td> </tr> <tr> <td><input type="checkbox"/> 20.2201(d)</td> <td><input type="checkbox"/> 20.2203(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(1)</td> <td><input type="checkbox"/> 20.2203(a)(4)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(i)</td> <td><input type="checkbox"/> 50.36(c)(1)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(ii)</td> <td><input type="checkbox"/> 50.36(c)(1)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iv)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(x)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iii)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(A)</td> <td><input type="checkbox"/> 73.71(a)(4)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iv)</td> <td><input type="checkbox"/> 50.46(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(B)</td> <td><input type="checkbox"/> 73.71(a)(5)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(C)</td> <td><input type="checkbox"/> OTHER</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(vi)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(D)</td> <td>Specify in Abstract below or in NRC Form 366A</td> </tr> </table>	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A
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10. POWER LEVEL 0																																					

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Erick Matzke, Compliance Engineer	TELEPHONE NUMBER (include Area Code) 402-533-6855
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX
D	CB	RV	Dresinva	Y					

14. SUPPLEMENTAL REPORT EXPECTED YES (If yes, complete 15. EXPECTED SUBMISSION DATE) X NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On March 15, 2008 at 0833 CDT, following a plant trip from 85% power, relief valve CH-223 lifted and failed to reclose, thus causing a two to three gallon per minute reactor coolant system leak through the letdown system into the pressurizer quench tank. CH-223 is a two inch relief valve located on a branch line between two automatic containment isolation valves; therefore, this valve is classified as part of the containment boundary. The operators did not immediately recognize CH-223 as a containment boundary valve governed by technical specifications.

On March 16, 2008 at 1355, operators determined CH-223 to be a containment boundary valve. At that time operators entered abnormal operating procedure AOP-12, "Loss of Containment Integrity" and Technical Specification 2.6(1)a. At 1401 the appropriate containment isolation valve was locked closed thus restoring containment integrity.

The root cause of this event was determined to be the failure to translate containment integrity design requirements from the Final and Updated Safety Analysis Reports into appropriate plant operating procedures and guidance. Corrective actions include reviewing and revising the Updated Safety Analysis Report (USAR) and plant operating procedures.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fort Calhoun Station	05000285	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
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NARRATIVE**BACKGROUND**

The Fort Calhoun Station Technical Specifications Section 2.6(1)a, "Containment Integrity" requires that containment integrity shall be maintained unless the reactor is in a cold or refueling shutdown condition. Containment integrity is maintained through normally locked or sealed-closed valves during power operation. Without containment integrity, it must be restored within one hour or the plant must be in at least hot shutdown within the next six hours, or be subcritical and less than 300 degrees F within the next six hours and in cold shutdown within the following 30 hours. Normally locked or sealed-closed valves (except for PCV-742A/B/C/D) may be opened intermittently under administrative control without constituting a violation of containment integrity.

EVENT DESCRIPTION

On March 15, 2008 at 0833 CDT, following a plant trip from 85% power (described in FCS LER 2008-001), a "Relief Valve CH-223 Discharge Temperature High Alarm" was received in the control room due to a closure of HCV-204, "Letdown Heat Exchanger CH-7 Inlet Valve", from a letdown system pressure transient. At 0903, with the plant in hot shutdown (mode 3), operators restored the letdown system in accordance with station procedures. At 1315 operators noted a two to three gallon per minute (gpm) reactor coolant system (RCS) leak and entered procedure AOP-22, "Reactor Coolant Leak". An investigation revealed that valve CH-223, "Regenerative Heat Exchanger CH-6 Letdown Relief Valve to Pressurizer Quench Tank", lifted and had not resealed. This allowed RCS leakage through CH-223 into the pressurizer quench tank, which is located within the containment building. Several attempts were made to manually seat CH-223, but leakage past the seat continued. On March 16, 2008 at 0115, operators secured the letdown system by closing the upstream isolation valve, TCV-202, "RCS Loop 2A Letdown Temperature Control Valve", and began intermittent charging to maintain pressurizer level. TCV-202 is the inboard isolation valve located in the containment, and HCV-204 is the outboard isolation valve located in the auxiliary building. HCV-204 was left in the open position.

CH-223 is located within a branch connection between automatic isolation valves HCV-204 and TCV-202 and is classified as part of the containment boundary.

On March 16, 2008 at 1355, operators determined that CH-223 is a containment boundary valve and AOP-12, "Loss of Containment Integrity" and Technical Specification 2.6(1)a, "Containment Integrity" were entered.

**LICENSEE EVENT REPORT (LER)
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NARRATIVE

At 1401 valve HCV-204 was closed restoring containment integrity. This was a conservative action since the automatic containment isolation valves were operable. Since containment integrity was not restored within the technical specification requirements this event is reportable per 10 CFR 50.73(a)(2)(i)(B).

CONCLUSION

The root cause of the event was determined through an in-depth investigation. The Technical Specifications, licensing and design basis, and related procedures were reviewed. The Fort Calhoun Station Final and Updated Safety Analysis Reports section 5.9.5 states, "Branch connections between the containment and the isolation valves are only included when necessary for system functioning or to enhance reliability, testing, or leak tightness. Such branch lines are equipped with valves to provide isolation integrity equal to at least that of the main system." The investigation concluded that since relief valve CH-223 is located on a branch line between two containment isolation valves, this valve is part of the containment boundary. This was not identified as such in plant procedures. Therefore, the root cause of this event is that containment integrity design requirements were not adequately translated from the Final and Updated Safety Analysis Reports into appropriate plant operating procedures and guidance.

CORRECTIVE ACTIONS

Upon discovery that CH-223 is part of the containment boundary, containment isolation valve HCV-204 was closed to re-establish containment integrity.

The Updated Safety Analysis Report (USAR) Section 5.9, "Structures Containment Penetrations" and associated figures and drawings will be reviewed and modified to uniquely identify containment penetration valves that are required for containment integrity, including annotation of automatic or non-automatic functioning. In addition, plant operating procedure OI-CO-5, "Containment Integrity," will be modified to reflect the results of the USAR review.

These corrective actions and other enhancements to plant documents will be controlled by the corrective action system.

SAFETY SIGNIFICANCE

Containment integrity is established to preclude the release of radioactive nuclides to the environment in the event of a design basis loss of coolant accident (LOCA). During the period when containment integrity was degraded, no event occurred to challenge the containment envelope. In addition, the outside containment isolation valve (HCV-204) was capable of closing on an automatic containment isolation actuation signal (CIAS). The closure of HCV-204 would maintain total containment leakage rate less than 1 La (leakage allowable) as described in Technical Specification 5.19.a. Therefore, this event had very minimal impact on the health and safety of the public.

SAFETY SYSTEM FUNCTIONAL FAILURE

This event does not constitute a safety system functional failure as described in NEI-99-02.

PREVIOUS SIMILAR EVENTS

Fort Calhoun Station reported a similar loss of containment integrity event in LER 2006-01.