Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

November 03, 2008

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN, P1-35
Washington, D. C. 20555-0001

10 CFR 50.73

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - DOCKET 50-259 - FACILITY OPERATING LICENSE DPR - 33 - LICENSEE EVENT REPORT (LER) 50-259/2008-001

The enclosed report provides details of a loss of secondary containment when the reactor vent zone dampers failed to close on a Group 6 containment isolation signal generated during testing activities.

TVA is reporting this in accordance with 10 CFR 50.73(a)(2)(v)(C), as any event or condition that could have prevented the fulfillment of the safety function of structures that are needed to control the release of radioactive material. There are no commitments contained in this letter.

Sincerely,

R. G. West
Site Vice President, BFN

cc: See page 2

IE22
NRR

Enclosure
cc (Enclosure):

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NRC FORM 366 (9-2007)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 08/31/2010
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 hours. 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	2. DOCKET NUMBER	3. PAGE
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4. TITLE: Loss Of Secondary Containment When The Reactor Vent Zone Dampers Failed To Close On A Group 6 Containment Isolation Signal.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									None	N/A
09	03	2008	2008	- 001 -	00	11	03	2008	FACILITY NAME None	DOCKET NUMBER N/A

9. OPERATING MODE: 1

10. POWER LEVEL: 100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☒ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER *(Include Area Code)*
Steve Austin, Licensing Engineer	256-729-2070

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
X	VA	SOL	A610	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO		N/A	N/A	N/A

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On September 3, 2008, at 2344 hours Central Daylight Time (CDT) during a scheduled performance of the Unit 1 Surveillance, RPS Circuit Protector Calibration/Functional Test for 1A1 and 1A2, the Unit 1 Reactor Operator noted that secondary containment dampers Reactor Zone Exhaust Inboard Isolation Damper (1-DMP-64-42) and Reactor Zone Exhaust Outboard Isolation Damper (1-DMP-64-43) failed to close on a Group 6 Primary Containment Isolation Signal generated during the surveillance. The root cause of this event is the use of Dow Corning 550 lubricant in a normally energized solenoid. In a March 2002 event, an ASCO solenoid valve failed to close. Silicone based lubricant used by the manufacture during assembly caused the valve to malfunction. The corrective actions included replacement of the Units 2 and 3 solenoid valves. However, the solenoids associated with the Unit 1 secondary containment isolation dampers were not replaced. In response to this event, TVA replaced the solenoid valves for these two dampers.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A) (17)*

I. PLANT CONDITION(S)

At the time of the event, Units 1, 2, and 3 were at approximately 100 percent power (3458 Megawatts thermal) and unaffected by the event.

II. DESCRIPTION OF EVENT

A. Event:

On September 3, 2008, at 2344 hours Central Daylight Time (CDT) during a scheduled performance of the Unit 1 Surveillance, RPS Circuit Protector Calibration/Functional Test for 1A1 and 1A2, the Unit 1 Reactor Operator (RO) noted that secondary containment dampers [DMP] Reactor Zone Exhaust Inboard Isolation Damper (1-DMP-64-42) and Reactor Zone Exhaust Outboard Isolation Damper (1-DMP-64-43) failed to close on a Group 6 Primary Containment Isolation Signal (PCIS) [JE] generated during the surveillance. The dampers were subsequently declared inoperable. At approximately, 2345 hours CDT Unit 1 entered Technical Specification (TS) 3.6.4.2 Action B; within 4 hours, isolate the affected flow penetration flow path by the of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.

On September 4, 2008, at 0038 hours Central Daylight Time (CDT) as part of initial trouble shooting activities, the Unit Supervisor (US) verified the ASCO valve solenoids de-energized as required on the Group 6 signal. The US isolated the control air to the damper actuator, and then mechanically agitated the solenoids. Dampers 1-DMP-64-42 and 1-DMP-64-43 closed. At approximately 0236 hours CDT, BFN completed TS 3.6.4.2 Action B requirements.

TVA is submitting this report in accordance with 10 CFR 50.73(a)(2)(v)(C), as any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

C. Dates and Approximate Times of Major Occurrences:

September 3, 2008	2344 hours CDT	Unit 1 RO notes the secondary containment dampers failed to close on Group 6 isolation signal.
September 3, 2008	2345 hours CDT	Unit 1 enters TS 3.6.4.2 Action B.
September 4, 2008	0236 hours CDT	Unit 1 completed TS 3.6.4.2 Action B.
September 4, 2008	0404 hours CDT	TVA made 8 hour non-emergency phone call to NRC in accordance with 10 CFR 72(b)(3)(v)(C).

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

TVA determined the dampers failed to close through a review made to ensure expected plant equipment response during conduct of the scheduled surveillance.

F. Operator Actions

Operations implemented TS 3.6.4.2 Action B.1: isolate the affected flow path by use of at least one closed and de-activated automatic valve, or blind flange.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT

A. Immediate Cause

The immediate cause for this event was the dampers failed to close on PCIS Group 6 isolation signal.

B. Root Cause

The root cause of this event is the use of Dow Corning 550 lubricant in a normally energized solenoid.

C. Contributing Factors

A programmatic deficiency contributed to this event. The issue with Dow Corning 550 lubricant was previously identified. In a March 2002 event, an ASCO solenoid valve failed to close. Silicone based lubricant used by the manufacture during assembly caused the valve to malfunction. The corrective actions included replacement of the Units 2 and 3 solenoid valves. However, the solenoids associated with the Unit 1 secondary containment isolation dampers were not replaced.

IV. ANALYSIS OF THE EVENT

Dampers 1-DMP-64-42 and 1-DMP-64-43 are controlled by ASCO Model NP8320 solenoid valves. The solenoids are normally energized allowing supplied plant control air [LF] to open the dampers. They de-energize on a PCIS Group 6 accident signal, isolating the control air, opening a vent port, venting the control air from the damper actuator, allowing the associated damper to close. In this event, the operator verified the solenoids were de-energized. The control air to the solenoids was manually isolated, and the dampers remained open. Finally, when each solenoid was mechanically agitated, once the vent port opened, the dampers closed.

The model solenoid valve involved in this event is installed in all of the secondary containment and several of the primary containment dampers. In the previous March 2002 event, one secondary containment damper failed to close. TVA's analysis indicated silicone based grease at the core plug interface of the stuck solenoid. At that time, the vendor indicated that valves manufactured until October 1, 1999, contained a small amount of Dow Corning 550 lubricant which was added during assembly. Dow Corning 550 lubricant contains a large fraction of silicone.

One of the ASCO solenoid valves that failed on September 3, 2008, was analyzed. The analysis indicated that the lubricant in the valve was very similar to the lubricant in the valve that failed in March of 2002. Consequently, these solenoids experienced the same failure mechanism as those in the March 2002 event.

V. ASSESSMENT OF SAFETY CONSEQUENCES

When the dampers failed to close, the secondary containment function was compromised and the potential for a ground level release was created. The BFN LOCA analysis assumes 2.0 percent primary containment leakage per day for the 30-day accident duration. Following the LOCA, the SGTS fans start and draw down the secondary containment to create a negative pressure with reference to the environment. This pressure difference ensures that leakage from the primary containment is connected and processed by the SGTS and released to the environment though the plants stack. The analysis does not take credit for iodine removal by the SGTS charcoal filters.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A) (17)*

As demonstrated in this event, Operations, using control room indication, determined that the dampers did not isolate and initiated immediate corrective actions to restore secondary containment, thus, minimizing the effect of the loss of secondary containment. Therefore, TVA concludes the health and safety of the public was not affected by this event.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

The dampers were closed and placed under administrative controls.

B. Corrective Actions to Prevent Recurrence (1)

TVA replaced the solenoid valves for dampers 1-DMP-64-42 and 1-DMP-64-43. TVA also found Unit 1 Reactor Zone Isolation Damper solenoids (1-FSV-64-13 and 1-FSV-64-14) could be susceptible to similar failure. Accordingly, these have been replaced.

VII. ADDITIONAL INFORMATION

A. Failed Components

ASCO Model NP 8320 ¼ inch 150 psi/120 volt solenoid valves.

B. Previous LERs on Similar Events

No recent LERs have been issued due to solenoid valve failures. The previous failure discussed in this report required only entry into an LCO. It did not meet the criterion for a report to the NRC.

C. Additional Information

Corrective action document for this report is PER 151814.

D. Safety System Functional Failure Consideration:

This event involved a safety system functional failure as referenced in NEI 99-02 and 10 CFR 50.73(a)(2)(v). This failure will be included in Performance Indicator Reporting in accordance with NEI 99-02.

E. Scram With Complications Consideration:

This event was not a complicated scram according to NEI 99-02.

VIII. COMMITMENTS

None.

(1) TVA does not consider the corrective action the regulatory requirement. The completion of the action will be tracked in TVA's Corrective Action Program.