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

June 21, 2010

10 CFR 50.73

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Browns Ferry Nuclear Plant, Unit 3
Facility Operating License No. DPR-68
NRC Docket No. 50-296

Subject: **Licensee Event Report 50-296/2010-002-00**

The enclosed Licensee Event Report (LER) provides details of an event involving one subsystem of the Standby Liquid Control (SLC) System being inoperable for longer than allowed by the plant's Technical Specifications.

The Tennessee Valley Authority (TVA) is submitting this report in accordance with 10 CFR 50.73(a)(2)(i)(B), as an operation or condition prohibited by the plant's Technical Specifications.

There are no new regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Dan Williamson, Acting Site Licensing and Industry Affairs Manager, at (256) 729-2636.

Respectfully,

James J Randich FOR

K. J. Polson
Vice President

cc: See page 2

IE22
NRR

Enclosure
cc (w/ Enclosure):

NRC Regional Administrator - Region II

NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE: A Subsystem of the Standby Liquid Control System was Inoperable Longer than Allowed by the Plant's Technical Specifications

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 N/A	DOCKET NUMBER N/A
04	20	2010	2010	- 002 -	00	06	21	2010	FACILITY NAME N/A	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)*
Mike Oliver, Licensing Engineer	256-729-7874

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

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 April 20, 2010, the 3B Standby Liquid Control (SLC) Pump failed to start during the performance of the quarterly SLC Pump Functional Test. For the test, Operations personnel had declared both SLC subsystems inoperable in accordance with the procedure and entered Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.1.7 Actions for both SLC subsystems inoperable (Action B, which requires restoration of one subsystem to operable status within 8 hours) and for one SLC subsystem inoperable (Action A, which requires both subsystems restored to operable status within 7 days).

Operations personnel returned the 3A SLC Pump to operable status and exited Action B. Action B was re-entered to complete the testing, and, after successful testing of the 3B SLC Pump, Operations personnel declared both subsystems operable and exited TS LCO 3.1.7 Actions B and A.

The cause of this event was the inoperability of the 3B SLC Pump motor breaker discovered when the pump failed to start. On March 29, 2010 during the refueling outage when racking in this breaker, the breaker's racking shaft sleeve did not fully engaged. Unit 3 entered TS LCO 3.1.7 applicability on April 6, 2010, during startup. Therefore, SLC Subsystem B was inoperable from April 6, 2010, to April 20, 2010, which is longer than the 7 day Completion Time allowed by Action A. SLC Subsystem A remained operable during this period.

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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 discovery, Browns Ferry Nuclear (BFN) Plant Units 1, 2, and 3 were at 100 percent power (3458 MWT).

II. DESCRIPTION OF EVENT

A. Event:

On April 20, 2010, at approximately 1140 hours Central Daylight Time (CDT), the 3B Standby Liquid Control (SLC) Pump [BR] failed to start during the performance of the quarterly SLC Pump Functional Test, 3-SI-4.4.A.1, "Standby Liquid Control Pump Functional Test." For the test, Operations personnel had declared both SLC subsystems inoperable in accordance with the procedure and entered Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.1.7 Actions for both SLC subsystems inoperable (Action B, which requires restoration of one subsystem to operable status within 8 hours) and for one SLC subsystem inoperable (Action A, which requires both subsystems restored to operable status within 7 days).

Operations personnel promptly returned the 3A SLC Pump to operable status and, by 1202 hours, exited Action B. Action B was re-entered at 1409 hours CDT to complete the surveillance testing, and, at 1518 hours CDT, after successful testing of the 3B SLC Pump, Operations personnel declared both SLC subsystems operable and exited TS LCO 3.1.7 Actions B and A.

The cause of this event was the inoperability of the 3B SLC Pump motor breaker discovered when the pump failed to start. The 3B SLC Pump failed to start because the pump breaker racking shaft sleeve was not fully engaged which interlocked the breaker from closing. The breaker's racking sleeve failed to engage while the breaker was being racked in at approximately 0127 hours CDT on March 29, 2010, during a refueling outage. Unit 3 entered TS LCO 3.1.7 applicability (Mode 2) at approximately 2048 hours CDT on April 6, 2010, during startup after the refueling outage. Therefore, SLC Subsystem B was inoperable from approximately 2048 hours CDT on April 6, 2010, to approximately 1518 hours CDT on April 20, 2010, which is longer than the 7 day Completion Time allowed by Condition A Required Action A.1. SLC subsystem A was verified operable during this period.

The Tennessee Valley Authority (TVA) is submitting this report in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's Technical Specifications.

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

None

C. Dates and Approximate Times of Major Occurrences:

March 29, 2010, at 0127 hours CDT	Operations personnel racked in the 3B SLC Pump breaker.
April 6, 2010, at 2048 hours CDT	Operations personnel prepared Unit 3 for startup from a refueling outage and entered TS LCO 3.1.7 applicability.

April 20, 2010, at 0830 hours CDT	Operations personnel commenced performance of surveillance 3-SI-4.4.A.1, "Standby Liquid Control Pump Functional Test."
April 20, 2010, at 0954 hours CDT	For the performance of 3-SI-4.4.A.1, Operations personnel declared both SLC subsystems inoperable and entered TS LCO 3.1.7 Action A and B for one and two SLC subsystems inoperable, respectively.
April 20, 2010, at 1140 hours CDT	The 3B SLC Pump failed to start during the performance of 3-SI-4.4.A.1.
April 20, 2010, at 1157 hours CDT	Operations personnel reviewed satisfactory testing of the 3A SLC Pump and commenced restoration to normal per 3-SI-4.4.A.1. Operations personnel observed and reported that the breaker for the 3B SLC Pump was tripped.
April 20, 2010, at 1202 hours CDT	Unit 3 Operations personnel returned the 3A SLC Pump to operable status and exited Action B. Operations personnel verified proper position of the 3B SLC Pump breaker.
April 20, 2010, at 1409 hours CDT	Operations personnel declared both SLC subsystems inoperable for testing and re-entered Action B.
April 20, 2010, at 1518 hours CDT	Completed 3-SI-4.4.A.1 for the 3B SLC Pump, declared both SLC subsystems operable, and exited TS LCO 3.1.7 Actions B and A.

D. Other Systems or Secondary Functions Affected:

None

E. Method of Discovery:

The 3B Standby Liquid Control pump was found inoperable during the performance of the scheduled quarterly surveillance 3-SI-4.4.A.1, "Standby Liquid Control Pump Functional Test."

F. Operator Actions:

None

G. Safety System Responses:

None

III. CAUSE OF THE EVENT

A. Immediate Cause:

The 3B SLC Pump failed to start.

B. Root Cause:

Operations personnel did not properly implement procedure steps or perform self checking and peer checking when racking in the breaker for the 3B SLC Pump for clearance restoration during a refueling outage.

C. **Contributing Factors:**

The General Electric (GE) type AK breakers racking shaft sleeve failed to spring back fully forward as it is designed to do. While this feature is not relied upon (i.e., the procedural steps ensure the sleeve is positioned fully forward) had it functioned it would have precluded this event.

IV. ANALYSIS OF THE EVENT

The 3B SLC Pump failed to start because the pump breaker was not properly positioned by Operations personnel when racking in the breaker for a clearance restoration step on March 29, 2010, during a refueling outage. The breaker is a 480VAC GE AK 2A-15 type breaker. When racking this breaker in, it is required for the racking shaft sleeve to slide fully forward with pins on the shaft slide into sleeve notches to be engaged in order for the breaker to be operable. When the breaker was checked after the SLC Pump would not start, it was found with the racking sleeve not fully engaged (fully forward). The racking sleeve is designed to spring return to the forward position. The design feature that includes the racking sleeve has led to a two step procedural action to "Remove the Racking Crank Handle" and "Verify the shaft sleeve slides fully forward" to manually verify the racking sleeve is engaged. If the shaft sleeve had operated as designed, it would have prevented this event.

Two Assistant Unit Operators (AUOs) racked in the breaker for a clearance restoration step on March 29, 2010, during a refueling outage. TVA's investigation found that the AUOs had inappropriately missed the second part of a step in the General Operating Instruction for racking in this type of breaker which requires "VERIFY shaft sleeve slides fully forward." Even though the procedure had two actions in one step, strict procedural adherence and attention to detail would have prevented this event from occurring.

V. ASSESSMENT OF SAFETY CONSEQUENCES

The safety consequences of this event were not significant. The failure of the AUOs to properly position (rack in) the 3B SLC Pump breaker caused the 3B SLC pump (one subsystem) to not be available for its intended safety function for the time period of March 29, 2010, to discovery on April 20, 2010. Although one SLC subsystem was unavailable, the other subsystem (with the 3A SLC pump) was operable during this period and was confirmed by testing to be fully functional and would have been available to perform the required safety function.

During the sequence of events described herein, one SLC subsystem was available for fulfillment of the SLC System safety function; therefore, TVA concludes that there was no significant reduction in the protection of the public as a result of this event.

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

VI. CORRECTIVE ACTIONS - The corrective actions are being managed with TVA's Corrective Action Program

A. Immediate Corrective Actions:

Operations personnel correctly positioned the 3B SLC pump breaker and the breaker was tested satisfactorily. All other safety-related 480VAC GE AK breakers were visually verified by Operations personnel to be correctly positioned.

B. Corrective Actions to Prevent Recurrence:

1. In accordance with TVA policy, appropriate personnel actions were taken for the two AUOs who racked in the breaker for the clearance restoration.
2. Operations Shift Managers briefed their respective crews about this event.
3. The event is scheduled to be added and presented to Licensed and Non-Licensed Operator Requalification Training by July 22, 2010.
4. The GE AK 2A-15 type breakers are being evaluated for design modification or additional procedural controls to enhance the reliability of the racking in procedure.

VII. ADDITIONAL INFORMATION

A. Failed Components:

None

B. Previous LERs on Similar Events:

None

C. Additional Information:

Corrective action document for this report is Problem Evaluation Report 225949.

D. Safety System Functional Failure Consideration:

In accordance with NEI 99-02 guidance, this event is not classified as a safety system functional failure.

E. Scram With Complications Consideration:

This event did not include a reactor scram.

VIII. COMMITMENTS

None