Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

March 26, 2014

10 CFR 50.73

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

Sequoyah Nuclear Plant, Unit 1
Facility Operating License No. DPR-77
NRC Docket No. 50-327

Subject: **Licensee Event Report 50-327/2014-001-00, "Never Performed Technical Specification Surveillance for Common Spare Component Cooling System Pump"**

The enclosed Licensee Event Report provides details concerning an event where Sequoyah Nuclear Plant Unit 1 operated in a condition prohibited by technical specifications. The event was due to an insufficient surveillance instruction that did not test the common spare component cooling system (CCS) pump's ability to automatically start and supply the B train CCS. This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B). This condition had no impact on Unit 2.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Mike McBrearty, Sequoyah Site Licensing Manager, at (423) 843-7170.

Respectfully,

John T. Carlin
Site Vice President
Sequoyah Nuclear Plant

Enclosure: Licensee Event Report 50-327/2014-001
cc: NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Sequoyah Nuclear Plant

IE22
NRR

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Sequoyah Nuclear Plant (SQN) Unit 1	05000327	1 OF 7

4. TITLE

Never Performed Technical Specification Surveillance for Common Spare Component Cooling System Pump

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
01	30	2014	2014	- 001	- 00	03	26	2014	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 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)
10. POWER LEVEL	☐ 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)
100	☐ 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

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Jon Johnson	423-843-8129

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				

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

On December 19, 2013, an initial license operator trainee discovered a lack of procedural guidance to perform Technical Specification (TS) Surveillance Requirement (SR) 4.7.3 b, which requires Unit 1 safety injection signal (SIS) start testing for the common spare component cooling system (C-S CCS) [CC] pump. Specifically, procedure, 1-SI-OPS-082-026.B, did not verify an SIS would start the C-S CCS pump and supply the Unit 1 B train header. All other SIS configurations for starting the C-S CCS pumps were previously accounted for and verified. Initially, SQN classified the condition as a missed surveillance, as the intended aspects of SR 4.7.3 b were not satisfied. Operations invoked TS 4.0.3 to allow testing in accordance with a missed surveillance and a risk evaluation was performed. A procedure change was implemented to provide for testing SIS start of the C-S CCS pump with both units on-line. The test was performed satisfactorily and SR 4.7.3 b requirements were met. The SQN investigation revealed the omission of the C-S CCS pump from the SIS testing dated back to the development of the initial plant surveillance documents. With no record of the SR 4.7.3 b ever being satisfied for the Unit 1 B train, the condition was re-classified as a never performed surveillance on January 30, 2014.

NARRATIVE

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

At the time of the event, Sequoyah Nuclear Plant (SQN) Unit 1 and Unit 2 reactors were operating at approximately 100 percent rated thermal power. The condition described in this LER did not affect SQN Unit 2.

II. DESCRIPTION OF EVENTS

A. Event:

On December 19, 2013, an initial license operator questioned the adequacy of procedural guidance used to perform Technical Specification (TS) required Unit 1 safety injection signal (SIS) start testing for the common spare component cooling system (C-S CCS) [CC] pump. The C-S CCS pump was determined not to be included as part of the Unit 1, SIS start testing. Since this was considered to be a missed Surveillance Requirement (SR), TS 4.0.3 was invoked as the intended aspects of SR 4.7.3 b were not satisfied. The condition was evaluated and an engineering risk evaluation was completed. On January 13, 2014, the performance of SIS start testing for the C-S CCS pump with both units online was satisfactorily completed and the requirements of SR 4.7.3 b were satisfied. On January 30, 2014, SQN Engineering completed a historical investigation back to the development of initial plant surveillance documents and determined, with no record of the surveillance ever being satisfied, the error was a never performed surveillance versus a missed surveillance.

B. Status of structures, components, or systems that were inoperable at the start of the event and contributed to the event:

There were no structures, components, or systems that contributed to the event.

C. Dates and approximate times of occurrences:

Dates	Description
October 3, 1991	1-SI-OPS-082-026.B, Loss of Offsite Power With Safety Injection - D/G 1B-B Test, revision 0 was issued.
November 06, 2013	1-SI-OPS-082-026.B, revision 44 was issued.
December 19, 2013 at 1815	PER 826482 was initiated - Performance of SR 4.7.3 b for Unit 1 B train CCS pump may be inadequate

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Sequoyah Nuclear Plant (SQN) Unit 1	05000327	2014	- 001	- 00	3 OF 7

NARRATIVE

December 20, 2013 at 2207	SQN Operations entered Limiting Condition for Operation (LCO) 1-70-LCO-2013-3517 of TS 4.0.3 for SR 4.7.3 b. An engineering risk evaluation was completed and actions to manage risk were put in place.
January 13, 2014 at 1103	Conditional performance of 1-SI-OPS-082-026.B was completed with all acceptance criteria met and 1-70-LCO-2013-3517 was exited.
January 30, 2014 at 0958	An engineering investigation was completed and it was determined SR 4.7.3 b related testing was not contained in any procedure from initial plant startup. The error was reclassified to "never performed surveillance" instead of "missed surveillance."

D. Manufacturer and model number of each component that failed during the event:

There were no component failures associated with this event. A latent omission of the C-S CCS pump SIS testing from 1-SI-OPS-082-026.B constituted a failed barrier of the procedure to fulfill its role in satisfying the requirements of SR 4.7.3 b.

E. Other systems or secondary functions affected:

There were no other systems or functions affected by this event.

F. Method of discovery of each component or system failure or procedural error:

An initial license student questioned the adequacy of procedural guidance to perform TS required Unit 1 SIS start testing for the C-S CCS pump. The historical search determined that SIS testing of the C-S CCS pump had never been included in 1-SI-OPS-082-026.B.

G. The failure mode, mechanism, and effect of each failed component, if known:

There were no component failures associated with this event.

H. Operator actions:

Operations personnel initially entered TS 4.0.3 for a missed surveillance for SR 4.7.3 b and requested an engineering risk evaluation of the condition.

Following a one-time procedure change to 1-SI-OPS-082-026.B, a special performance was successfully completed. This satisfied the performance of SR 4.7.3 b for the Unit 1 B train CCS pump.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Sequoyah Nuclear Plant (SQN) Unit 1	05000327	2014	- 001	- 00	4 OF 7

NARRATIVE

I. Automatic and manually initiated safety system responses:

No automatic or manually initiated safety system responses were required.

III. CAUSE OF THE EVENT

A. The cause of each component or system failure or personnel error, if known:

This error was attributed to the lack of procedural guidance to perform TS required Unit 1 SIS start testing for the C-S CCS pump. However, it was not possible to evaluate the failed human performance barrier that contributed to the error due to the time gap between the actual error and its discovery. It was determined that the omission of the C-S CCS pump SIS testing from 1-SI-OPS-082-026.B constituted a failed barrier of the procedure to fulfill its role in satisfying the requirements of SR 4.7.3 b. Analysis determined the surveillance test was omitted from 1-SI-OPS-082-026.B due to legacy human performance errors.

B. The cause(s) and circumstances of each human performance related root cause:

A cause evaluation was completed and no contributing causes were identified. The human performance error that may have contributed is a legacy issue dating back to initial plant licensing and startup.

IV. ANALYSIS OF THE EVENT

The component cooling system is the intermediate, closed-loop cooling water systems between various components handling reactor coolant system fluids, and the Essential Raw Cooling Water (ERCW). Two basic purposes of the CCS are: 1) to remove heat from the components and heat exchangers that are handling radioactive fluids and 2) to serve as a buffer against leakage from the nuclear systems to the ERCW and thus to the environment.

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

The C-S CCS pump is normally powered from Unit 2 through shutdown power. Even though the C-S CCS pump is powered from Unit 2, there is a start signal from both Unit 1 solid state protection system (SSPS) and Unit 2 SSPS from an SIS. The SIS from Unit 2 is tested every 18 months in accordance with 2-SI-OPS-082-026.B, Loss of Offsite Power with Safety Injection – D/G 2B-B Test. The C-S CCS pump can also be supplied power from Unit 1 A train shutdown power. When selected to A train shutdown power, the pump is inoperable because it is only used to supply B train CCS cooling water. When selected for A train power, the pump start is also initiated from both Unit 1 SSPS and Unit 2 SSPS from a SIS. This testing is not required as the C-S CSS pump is inoperable when powered from A train. At the time this condition was identified, previous testing was discovered where the A train SIS was verified to be tested and it was incorrectly communicated to the Operations

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Sequoyah Nuclear Plant (SQN) Unit 1	05000327	2014	- 001	- 00	5 OF 7

NARRATIVE

shift crew that this testing was the missing B train surveillance. Subsequently, the Operations crew declared a missed surveillance in accordance with TS 4.0.3.

The C-S CCS pump is a normally operating pump. With the pump not in service, LCO action 3.7.3 must be entered and the B train CCS loop declared inoperable. In the event of loss of normal B train power with the pump running, the C-S CCS will automatically start in 30 seconds when the emergency diesel generator is tied to the shutdown board. Based on these start signals, the ability of the C-S CCS pump to meet its safety function was met. However, Unit 1 TS SR 4.7.3 b requires: "At least once per 18 months, during shutdown, by verifying that each component cooling system pump starts automatically on a Safety Injection test signal." As a result, the condition identified represents a failure to comply with Technical Specifications and the applicability of TS 4.0.3 was not available for this condition.

The components not previously tested consisted of: 1) contacts from the K608B slave relay in Unit 1 B train SSPS and 2) the wiring from Unit 1 SSPS slave relay K608B to Unit 2 SSPS slave relay K608B. All other components associated with the Unit 1 B train SIS start of the C-S CCS are tested and were not impacted. Since the identification of the components that were not tested, a special surveillance test was written and performed to bring the surveillance into compliance. This testing was performed satisfactorily and proved the Unit 1 SI signal from K608B would start the C-S CCS pump.

The procedure error was initially classified as a missed surveillance, as the intended aspects of SR 4.7.3 b were not satisfied. The CCS was determined to be operable due to TS 4.0.3. TS 4.0.3 was invoked to allow for surveillance testing in accordance with the missed surveillance. A procedure change to 1-SI-OPS-082-026.B was executed to provide for testing SIS start to the C-S CCS pump with both units online. The test was performed successfully and SR 4.7.3 b requirements were satisfied.

The SQN investigation into the history of 1-SI-OPS-082-026.B continued and revealed the omission of the C-S CCS pump from the SIS testing procedure dated back to the development of the initial plant surveillance documents. Additionally, response time testing and work orders were reviewed, but validation of the missing surveillance could not be found. A review of the previously performed Generic Letter 96-01 actions that should have captured this missed parallel start path shows that the task force looked at, but also missed this signal from Unit 1. With no record of the surveillance ever being satisfied, the error was reclassified to "never performed surveillance" instead of "missed surveillance." This discovery invalidated invoking TS 4.0.3. However, the discovery occurred after the successful testing of the C-S CCS pump for SIS start with SR 4.7.3 b requirements satisfied.

NARRATIVE

V. ASSESSMENT OF SAFETY CONSEQUENCES

A. Availability of systems or components that could have performed the same function as the components and systems that failed during the event.

This event did not result in a failed system or component. The event is solely a condition where a TS SR was not performed.

B. For events that occurred when the reactor was shut down, availability of systems or components needed to shutdown the reactor and maintain safe shutdown conditions, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

This event did not occur when the reactor was shut down. Safety-related systems that were needed to shut down the reactor, maintain safe shutdown conditions, remove residual heat or mitigate the consequences of an accident remained available throughout the event.

C. For failure that rendered a train of safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service.

On December 20, 2013, the condition was evaluated by Operations as a missed surveillance of SR 4.7.3 b and the provisions of TS 4.0.3 were invoked. However, a risk assessment was performed and actions to mitigate risk were implemented. On January 13, 2014, online testing was completed for the C-S CCS pump and all acceptance criteria were met. The condition existed since plant start-up and upon discovery, testing to satisfy SR 4.7.3 b was completed approximately twenty four days later.

VI. CORRECTIVE ACTIONS

Corrective Actions are being managed by TVA's Corrective Action Program under problem evaluation report number 826482.

A. Immediate Corrective Actions:

- Engineering risk assessment completed
- Conducted a one-time revision to 1-SI-OPS-082-026.B to facilitate on-line testing, and
- Successfully completed C-S CCS pump surveillance testing which met all acceptance criteria

B. Corrective Actions to Prevent Recurrence or to reduce the probability of similar events occurring in the future.

Procedure 1-SI-OPS-082-026.B was revised to include the necessary steps to satisfy the requirements in SR 4.7.3 b for C-S CCS pump start on receipt of a Unit 1, B train SIS.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Sequoyah Nuclear Plant (SQN) Unit 1	05000327	2014	- 001	- 00	7 OF 7

NARRATIVE

VII. ADDITIONAL INFORMATION

A. Previous similar events at the same plant.

A review of previous reportable events for the past 3 years did not identify any previous similar events.

B. Additional information.

The action in TS 4.0.3 is to perform the SR within the limit of the surveillance interval. For TS 4.7.3 b, the surveillance interval is 18 months. Since the surveillance was not to be performed within 24 hours, a risk evaluation was completed and actions to manage risk were implemented.

C. Safety System Functional Failure Consideration.

This condition did not result in a safety system functional failure.

D. Scrams with Complications Considerations.

This condition did not result in an unplanned scram with complications.

VIII. COMMITMENTS

None