



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

August 5, 2014

10 CFR 50.73

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

Sequoyah Nuclear Plant, Units 1 and 2  
Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket No. 50-327 and 50-328

**Subject: Licensee Event Report 50-327/2014-002-00, "Lack of Administrative Controls for Some Containment Penetrations During Fuel Movement Results in Condition Prohibited by Technical Specifications"**

The enclosed Licensee Event Report provides details concerning occurrences where Sequoyah Nuclear Plant Units 1 and 2 operated in a condition prohibited by technical specifications. The occurrences involved the lack of administrative controls for some containment penetrations during fuel movement. This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B), as an event or condition that is prohibited by technical specifications.

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

Respectfully,

John T. Carlin  
Site Vice President  
Sequoyah Nuclear Plant

Enclosure: Licensee Event Report 50-327/2014-002  
cc: NRC Regional Administrator – Region II  
NRC Senior Resident Inspector – Sequoyah Nuclear Plant

TE22  
NRR

**LICENSEE EVENT REPORT (LER)**(See Page 2 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 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.

**1. FACILITY NAME**

Sequoyah Nuclear Plant Unit 1

**2. DOCKET NUMBER**

05000327

**3. PAGE**

1 OF 7

**4. TITLE**

Lack of Administrative Controls for Some Containment Penetrations During Fuel Movement Results in Condition Prohibited by 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	DOCKET NUMBER
06	06	2014	2014	- 002	- 00	08	05	2014	SQN Unit 2	05000328
									FACILITY NAME	DOCKET NUMBER

**9. OPERATING MODE**

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

1	<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)
10. POWER LEVEL	<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

**12. LICENSEE CONTACT FOR THIS LER****LICENSEE CONTACT**

Rebecca L. Travis

**TELEPHONE NUMBER (Include Area Code)**

423-843-8335

**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**☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH DAY YEAR

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

On June 6, 2014, it was discovered that appropriate provisions did not exist to place administrative controls on the containment penetrations used for ice condenser maintenance during fuel movement. In 2000, Sequoyah Nuclear Plant (SQN) obtained Technical Specification (TS) change 99-15 to TS 3.9.4 allowing some containment penetrations to remain open during fuel movement, if administrative controls were in place. SQN did not comply with TS 3.9.4 when invalid engineering evaluations, instead of administrative controls were used to allow manipulation of some penetration valves. This condition occurred multiple times during the fourteen year period. The cause of this event was an inadequate revision of procedure 1, 2-SI-OPS-088-006.0, "Containment Building Ventilation Isolation," following TS change 99-15. Corrective actions include revision of 1, 2-SI-OPS-088-006.0 to enhance guidance on control of these containment penetrations and removal of the reference to the 1991 engineering safety evaluation.

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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](mailto: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.

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		YEAR	SEQUENTIAL NUMBER	REV NO.	
Sequoyah Nuclear Plant Unit 1	05000327	2014	- 002	- 00	2 OF 7

**NARRATIVE****I. PLANT OPERATING CONDITIONS BEFORE THE EVENT**

At the time of the event, Sequoyah Nuclear Plant (SQN) Unit 1 reactor was operating at approximately 100 percent rated thermal power and the Unit 2 reactor was shut down for the 2014 spring refueling outage (U2R19).

**II. DESCRIPTION OF EVENTS****A. Event:**

In 2000, SQN obtained Technical Specification (TS) change 99-15 to TS 3.9.4 that permitted some containment penetrations to remain open during fuel [AC] movement, if administrative controls were in place. Prior to 2000, some penetrations were permitted to be open during fuel movement if evaluated and approved by engineering while other penetrations were not allowed to be used. However, in 1999, the NRC determined the engineering evaluations were invalid. When plant procedures were changed to allow the penetrations to be open with administrative controls associated with the TS change, the provision for crediting the engineering evaluations was not deleted. This was not discovered until U2R19 in 2014. As a result, SQN did not comply with TS 3.9.4 when engineering evaluations, not administrative controls, were used to manipulate certain penetration valves. This condition occurred multiple times during the fourteen year period.

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

The affected structures, systems, or components (SSCs) are the containment vessel and penetrations X79A and X79B. Penetrations X79A and X79B are used during outages to transport ice into containment in order to maintain the ice condenser [BC]. In addition, the steam generator sludge lancing penetration X54 and the ice condenser melt drain system penetration X117 were also opened to support steam generator and ice condenser maintenance respectively. These penetrations were breached without the TS 3.9.4 required administrative controls.

Per TS 3.9.4, the administrative controls for the ice blowing, steam generator sludge lancing, and ice condenser melt drain system penetrations are to verify that the penetration can be closed by an isolation valve, blind flange, manual valve, or equivalent. The violation was failure to enter LCO 3.9.4 and document that administrative controls were in place.

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## NARRATIVE

## C. Dates and approximate times of occurrences:

Dates	Description
September 27, 1991	Engineering safety evaluation was conducted related to ice blowing during fuel movement.
September 30, 1991	Engineering safety evaluation was conducted related to open steam generator maintenance penetrations during fuel movement.
November 18, 1991	NRC Inspection Report 50-327 and 328/91-23 determined the installation and operation of ice blowing piping to the containment penetration while moving fuel was not regulatory safety significant.
September 26, 1997	Engineering safety evaluation was conducted related to open penetrations for ice melt drainage.
July 12, 1999	Problem Evaluation Report (PER) 99-007066-000 was issued to document that TS 3.9.4 is unclear in regard to the scope of Action c. A TS change was initiated as corrective action.
August 13, 1999	NRC Inspection Report 50-327 and 328/99-04 determined the installation and operation of ice blowing piping to the containment penetration while moving fuel was a violation of TS 3.9.4.c.1 and inappropriate changes to 2-SI-OPS-088-006.0 using the 10CFR50.59 process impacted TS 3.9.4 without prior NRC approval.
September 21, 1999	NRC Exercise of Enforcement Discretion Letter issued for violations described in NRC Inspection Report 99-04.
February 18, 2000	In TS amendment 240 (Unit 2 TS change 99-15), TS 3.9.4 allows administrative controls for open penetrations during fuel movement (Unit 1 TS Amendment 249).
February 24, 2000	2-SI-OPS-088-006.0, Revision 12 added a note providing for unisolation of containment penetrations under administrative control in accordance with TS change 99-15 but left in place the reference to 1991 engineering safety evaluation regarding ice blowing during fuel movement.

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Dates	Description
May 14, 2014	Issued procedure 2-SI-OPS-088-006.0, revision 26 to enhance the guidance on containment penetrations and administrative controls and removed reference to engineering safety evaluations for steam generator maintenance and ice melt drain system penetrations.
May 16, 2014	Issued procedure 2-SI-OPS-088-006.0, revision 27 to enhance guidance on containment penetrations and administrative controls and removed reference to 1991 engineering safety evaluation regarding ice blowing during fuel movement.
June 6, 2014	A Shift Manager concurrence/review was completed for PER 886970, TS 3.9.4 compliance issue with ice blowing penetrations X79A and X79B. Past Operability Evaluation was approved.

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

There were no component failures associated with this event. This event only involved inadequate TS compliance due to lack of administrative controls on the ice blowing, steam generator sludge lancing, and ice condenser melt drain system penetrations during fuel movement.

**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:**

The fact that there were not any provisions made to place administrative controls on the containment penetrations during fuel movement as required in TS 3.9.4 was discovered during reviews prior to fuel movement during U2R19. When the 0-GO-15, "Containment Closure Control" electronic database was being reviewed in preparation for U2R19, it was discovered that the ice blowing penetrations were incorrectly documented as not requiring TS 3.9.4 administrative controls.

**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:**

Procedure 2-SI-OPS-088-006.0 was revised to enhance the guidance on containment penetrations and administrative controls and removed reference to engineering safety

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evaluations for steam generator maintenance and ice melt drain system penetrations. The issue was placed in the SQN corrective action program.

I. Automatic and manually initiated safety system responses:

There were no automatic or manually initiated safety system responses required.

III. CAUSE OF THE EVENT

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

The cause of this event was inadequate revision to 1, 2-SI-OPS-088-006.0, following TS change 99-15.

Following TS change 99-15, TS 3.9.4.c required that penetrations be closed during fuel movement or administrative controls be implemented. Investigation of 1, 2-SI-OPS-088-006.0 revision history determined that the necessary steps to satisfy TS 3.9.4.c following TS change 99-15 for these penetrations were not adequate. The event is a legacy issue due to the time gap between the inadequate procedure revision and its discovery.

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

No causal factors related to personnel performance were identified due to the legacy nature of the event. It was not possible to evaluate the human performance or environmental barriers that may have contributed to the event due to the time gap between the inadequate procedure revision and its discovery.

IV. ANALYSIS OF THE EVENT

This event was attributed to inadequate procedural controls when these penetrations are opened during fuel movement. SQN failed to implement appropriate procedural guidance in the procedure revision immediately following TS change 99-15 for TS 3.9.4 and was carried forward in subsequent revisions. Adequate administrative controls would have been to verify that the penetration could have been closed by an isolation valve, blind flange, manual valve, or equivalent.

Engineering reviewed operator shift logs for the past three years and found no entries related to the implementation of TS 3.9.4 administrative controls for ice transfer containment breaches during fuel movement. Procedure 0-GO-15, requires individuals to close the containment penetrations. Procedure 0-MI-MXX-061-001.0, "Ice Condenser Ice Servicing," has steps specifically to close the penetration during a fuel handling accident. Procedure AOP-M.04, "Refueling Malfunctions," directs personnel to remove the ice blowing piping and install a blind flange if a fuel handling accident occurs. AOP-M.04 directs the operators to isolate any open containment penetrations using 1, 2-SI-OPS-088-006.0.

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Investigation of 1, 2-SI-OPS-088-006.0 revision history determined that the necessary steps to satisfy TS 3.9.4.c following TS change 99-15 are not adequate to ensure the prompt closure of these penetrations. The event was determined to be a legacy issue due to the time gap between the initial inadequate procedure revision following TS change 99-15 in 2000 and its discovery in 2014.

It was not possible to evaluate the human performance or environmental barriers that contributed to the inadequate procedure revision due to the time gap involved. The failure to remove the reference to engineering evaluations from 1,2-SI-OPS-088-006.0 immediately following TS change 99-15 has been classified as a failed barrier in terms of written communications content.

**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.

- 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 occurred with Unit 1 in Mode 1 at 100 percent power and Unit 2 shutdown in Mode 6. Since the reactor was shut down, a release could have been possible if a fuel handling accident had occurred.

- 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.

There was no failure that rendered a train of a safety system inoperable.

**VI. CORRECTIVE ACTIONS**

Corrective Actions are being managed by TVA's Corrective Action Program under PER 886970.

- A. Immediate Corrective Actions:

Revised 2-SI-OPS-088-006.0 to enhance guidance on containment penetrations and administrative controls and removed reference to the 1991 engineering safety evaluation.

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

- Place 1-SI-OPS-088-006.0 on administrative hold.
- Revise 1-SI-OPS-088-006.0 to enhance guidance on containment penetrations and administrative controls and remove reference to the 1991 engineering safety evaluation.

**VII. ADDITIONAL INFORMATION**

A. Previous similar events at the same plant.

A review of previous reportable events for the past 3 years was performed and identified LER 1-2013-004-01 as a similar event. This LER involved a failure to comply with TSs for containment penetrations during fuel movement resulting from ineffective procedures. In addition, LER 1-2014-001-00 involved a never performed TS surveillance for the Common Spare Component Cooling System (CCS) Pump. The cause of this event was also due to lack of procedural guidance.

B. Additional information.

None.

C. Safety System Functional Failure Consideration.

This event 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