



Sequoyah Nuclear Plant, Post Office Box 2000, Soddy Daisy, Tennessee 37384

October 19, 2021

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  
Renewed Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket Nos. 50-327 and 50-328

**Subject: Licensee Event Report 50-327 and 50-328/2021-003-00, Exceeded Breach Margin Renders Both Trains of the Auxiliary Building Gas Treatment System Inoperable**

The enclosed licensee event report provides details concerning a breached door associated with the auxiliary building secondary containment enclosure boundary that resulted in both trains of the Auxiliary Building Gas Treatment System being declared inoperable. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's Technical Specifications and in accordance with 10 CFR 50.73(a)(2)(v), as an event or condition that could have prevented the fulfillment of a safety function of structures or systems that are needed to: (C) control the release of radioactive material and (D) mitigate the consequences of an accident.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Jeffrey Sowa, Site Licensing Manager, at (423) 843-8129.

Respectfully,

Marshall,  
Thomas B.

Digitally signed by Marshall,  
Thomas B.  
Date: 2021.10.19 12:38:26  
-04'00'

Thomas Marshall  
Site Vice President  
Sequoyah Nuclear Plant

Enclosure: Licensee Event Report 50-327 and 50-328/2021-003-00  
cc: NRC Regional Administrator – Region II  
NRC Senior Resident Inspector – Sequoyah Nuclear Plant



## LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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## 1. Facility Name

Sequoyah Nuclear Plant Unit 1

## 2. Docket Number

05000327

## 3. Page

1 OF 6

## 4. Title

Exceeded Breach Margin Renders Both Trains of the Auxiliary Building Gas Treatment System Inoperable

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
08	20	2021	2021	- 003 -	00	10	19	2021	Sequoyah Nuclear Plant Unit 2	05000328
									Facility Name NA	Docket Number 05000

## 9. Operating Mode

1

## 10. Power Level

100

## 11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<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)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	

☐ Other (Specify here, in Abstract, or in NRC 366A).

## 12. Licensee Contact for this LER

## Licensee Contact

Jeffrey Sowa

## Phone Number (Include Area Code)

423.843.8129

## 13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To IRIS	Cause	System	Component	Manufacturer	Reportable To IRIS
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## 14. Supplemental Report Expected

☒ No☐ Yes (If yes, complete 15. Expected Submission Date)

## 15. Expected Submission Date

Month

N/A

Day

N/A

Year

N/A

## 16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On August 20, 2021, at 0905 eastern daylight time main control room operators were notified that auxiliary building secondary containment enclosure (ABSCE) boundary Door A118 was open. This was discovered by Fix-it-now personnel that were in the process of establishing compensatory measures associated with an active breach permit for Door A118. A past operability evaluation determined that ABSCE Door A118 had been left open without compensatory measures in place on four occasions between August 18 and August 20, 2021. The open door created a breach of the ABSCE boundary that exceeded the allowed breach margin and rendered both trains of the Auxiliary Building Gas Treatment System (ABGTS) inoperable. Additionally, the POE determined that due to the unknown inoperability of the ABGTS, the requirements of Limiting Condition for Operation 3.7.12 Condition E were not met.

The cause of the event was miscommunication between the Work Control Center Senior Reactor Operator and Maintenance Services personnel on the requirements of the ABSCE breaching procedure, related to the work being performed, resulting in a breach permit not being issued when required. Corrective actions included revising the ABSCE breaching procedure to clarify exception requirements and require a breach permit if an ABSCE door will be left open greater than the allowable time and briefings with Operations personnel concerning the requirements of the ABSCE breaching procedure.



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

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1. FACILITY NAME		2. DOCKET NUMBER		3. LER NUMBER		
Sequoyah Nuclear Plant Unit 1		05000-327		YEAR	SEQUENTIAL NUMBER	REV NO.
				2021	- 003	- 00

**NARRATIVE****I. Plant Operating Conditions Before the Event**

At the time of the event, Sequoyah Nuclear Plant (SQN) Units 1 and 2 were in Mode 1 at 100 percent rated thermal power.

**II. Description of Event****A. Event Summary:**

On August 20, 2021, at 0905 eastern daylight time (EDT), main control room (MCR) operators were notified that auxiliary building [EIS: NF] secondary containment enclosure (ABSCE) boundary Door [EIS: DR] A118 was open. This was discovered by Fix-it-now (FIN) personnel that were in the process of establishing compensatory measures associated with an active breach permit for Door A118. The arrival of FIN personnel, with a breach permit and appropriate compensatory actions to close the door as required, allowed operators to determine the ABSCE was operable at the time of discovery.

Investigation revealed Maintenance Services personnel had been taking equipment through the door as part of ongoing work associated with a glycol chiller replacement project. The work order had instructions to obtain an ABSCE breach permit; however, when Maintenance Services personnel reported to the Work Control Center (WCC) to obtain the permit, the WCC senior reactor operator (SRO) incorrectly determined an ABSCE breach permit was not required. As a result, ABSCE Door A118 was left open without a breach permit and required compensatory measures until FIN personnel discovered the issue at 0905.

A past operability evaluation (POE) determined that ABSCE Door A118 had been left open without compensatory measures in place on four occasions between August 18 and August 20, 2021 (the longest period the door was open without compensatory measures in place was approximately 21 minutes). The open door created a breach of the ABSCE boundary that exceeded the allowed breach margin. The four occasions should have caused entry into Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.12, Condition B for two trains of the Auxiliary Building Gas Treatment System (ABGTS) [EIS: VF] inoperable due to an inoperable ABSCE boundary in Mode 1, 2, 3, or 4 and Condition E for a required train of ABGTS inoperable with fuel stored in the spent fuel pool. The inoperability of two trains of the ABGTS during the required mode of applicability constitutes an event or condition that could have prevented fulfillment of a safety function of structures or systems that are needed to: (C) control the release of radioactive material and (D) mitigate the consequences of an accident. This LER documents the reportable event under 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D).

Additionally, the POE determined that due to the unknown inoperability of the ABGTS, the requirements of LCO 3.7.12 Condition E were not met. Condition E requires immediately suspending all crane operations with loads over the spent fuel pool. Contrary to this

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CONTINUATION SHEET**

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		YEAR	SEQUENTIAL NUMBER	REV NO.
Sequoyah Nuclear Plant Unit 1	05000-327	2021	- 003	- 00

requirement, on three occasions loads were taken over the spent fuel pool as SQN was in the process of receiving new fuel. Failure to immediately suspend crane operations constitutes an operation or condition prohibited by TSs and is therefore being reported in accordance with 10 CFR 50.73(a)(2)(i)(B).

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

No inoperable structures, components, or systems contributed to this event.

- C. Dates and approximate times of occurrences:

Date/Time (EDT)	Description
08/18/21, 08:10:40	Door A118 was breached to support glycol chiller replacement.
08:20:45	Door A118 was closed.
08/18/21, 13:08:33	Door A118 was breached to support glycol chiller replacement.
13:21:03	Door A118 was closed.
08/19/21, 12:53:28	Door A118 was breached to support glycol chiller replacement.
13:09:00	Door A118 was closed.
08/20/21, 08:43:56	Door A118 was breached to support glycol chiller replacement.
09:05:00	Operators were notified that Door A118 was open when FIN personnel arrived at Door A118 with an active breach permit and appropriate compensatory actions to close the door as required. This allowed operators to determine the ABSCE was operable at the time of discovery.

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

There was no component that failed during the event.

- E. Other systems or secondary functions affected:

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

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

Operators were notified that Door A118 was open by FIN personnel.



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Sequoyah Nuclear Plant Unit 1	05000-327	YEAR	SEQUENTIAL NUMBER	REV NO.
		2021	- 003	- 00

**G. Failure mode, mechanism, and effect of each failed component:**

There was no component that failed during the event.

**H. Operator actions:**

Operators instructed FIN personnel to close Door A118.

**I. Automatically and manually initiated safety system responses:**

None.

**III. Cause of the Event**

**A. Cause of each component or system failure or personnel error:**

The human performance factors related to this event were procedures, communications, and work practices. The ABSCE breaching procedure requirements were not understood by Maintenance Services personnel and not properly communicated by the WCC SRO. There was a miscommunication concerning the scope of the work being performed and the need for a breach permit. The work briefing with the WCC SRO resulted in a change to the work plan that was not re-evaluated by stakeholders to identify its impact to the job plan.

**B. Cause(s) and circumstances for each human performance related root cause:**

The cause of the event was miscommunication between the WCC SRO and Maintenance Services personnel on the requirements of the ABSCE breaching procedure, related to the work being performed, resulting in a breach permit not being issued when required.

Personnel involved were from the Operations and Maintenance Services groups. The Operations personnel were NRC licensed, TVA employees. The Maintenance Services personnel were non-licensed, supplemental workers. There were no schedule or situational pressures present.

**IV. Analysis of the Event:**

The ABGTS filters airborne radioactive particulates from the area of the fuel pool following a fuel handling accident or loss of coolant accident (LOCA). In Mode 1, 2, 3, or 4, the ABGTS is required to be operable to provide fission product removal associated with Emergency Core Cooling System leaks due to a LOCA and leakage from containment and annulus. The analysis of the fuel handling accident assumes that the ABSCE boundary is capable of being established to ensure the releases from the auxiliary and containment buildings are consistent with the dose consequence analysis, no credit is taken for filtration by the ABGTS.

ABGTS is a standby system that consists of two independent and redundant trains. Each train consists of a heater, a prefilter, a high efficiency particulate air filter, an activated charcoal adsorber



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Sequoyah Nuclear Plant Unit 1	05000-327	YEAR	SEQUENTIAL NUMBER	REV NO.
		2021	- 003	- 00

section for removal of gaseous activity, and a fan. The system initiates filtered ventilation of the auxiliary building following receipt of a high radiation signal from the fuel handling area radiation

monitors, a high radiation signal from the train-specific Auxiliary Building exhaust vent monitor, a Phase A containment isolation signal from either reactor, or a high temperature signal from the Auxiliary Building air intakes.

The breached door exceeded the allowed ABSCE breach margin rendering the ABSCE inoperable. This configuration could have prevented the ABGTS from maintaining a pressure less than or equal to -0.25 inches water gauge with respect to atmospheric pressure during the post accident mode of operation.

### V. Assessment of Safety Consequences

There were no actual safety consequences as a result of this event. Engineering evaluation determined that a delay associated with closing Door A118 would not have resulted in exceeding 10 CFR 100 dose limits. A probabilistic risk assessment determined there would be no measurable changes to Core Damage Frequency or Large Early Release Frequency for this event.

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

None.

- 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:

The event did not occur when the reactor was shut down.

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

The arrival of FIN personnel at 0905, with a breach permit and appropriate compensatory actions to close the door as required, allowed operators to determine the ABSCE was operable at the time of discovery.

### VI. Corrective Actions

The event was entered into the Tennessee Valley Authority Corrective Action Program (CAP) under condition reports (CRs) 1715829 and 1716097.



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Sequoyah Nuclear Plant Unit 1	05000-327	2021	- 003	- 00

**A. Immediate Corrective Actions:**

Door A118 was closed. Operations conducted a prompt investigation associated with human performance to identify actions that led to the event.

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

Corrective actions included revising the ABSCE breaching procedure to clarify exception requirements and require a breach permit if an ABSCE door will be left open greater than the allowable time and briefings with Operations personnel concerning the requirements of the ABSCE breaching procedure.

**VII. Previous Similar Events at the Same Site:**

LER 327 and 328/2018-002 was submitted for an exceeded breach margin that rendered both trains of the ABGTS inoperable. An evaluation determined that the event was related, in part, to a failure to review the requirements of the ABSCE breach permit. Corrective actions included revising the associated work order to add a hold point to ensure the ABSCE permit is reviewed, understood, and adhered to prior to and during breach.

**VIII. Additional Information**

There is no additional information.

**IX. Commitments:**

There are no commitments.