TENNESSEE VALLEY AUTHORITY

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

June 07, 2023

10 CFR 50.73

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

Sequoyah Nuclear Plant, Unit 2
Renewed Facility Operating License No. DPR-79
NRC Docket No. 50-328

Subject: **Licensee Event Report 50-328/2023-001-00, Inoperable Ice Condenser Intermediate Deck Doors Results in Condition Prohibited by Technical Specifications**

The enclosed licensee event report provides details concerning entry into a Mode of Applicability with inoperable ice condenser intermediate deck doors. 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 unit's Technical Specifications.

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

Respectfully,

Marshall, Thomas B.

Digitally signed by Marshall, Thomas B.
Date: 2023.06.07 11:18:38 -04'00'

Thomas Marshall
Site Vice President
Sequoyah Nuclear Plant

Enclosure: Licensee Event Report 50-328/2023-001-00
cc: NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Sequoyah Nuclear Plant

NRC FORM 366 (03-14-2023) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

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LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)
(See NUREG-1022, R.3 for instruction and guidance for completing this form
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name		2. Docket Number	3. Page
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4. Title

Inoperable Ice Condenser Intermediate Deck Doors 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	Revision No.	Month	Day	Year	Facility Name		Docket Number
04	11	23	2023	- 001 -	00	06	07	23	N/A	☐ 050	N/A
									Facility Name		Docket Number
									N/A	☐ 052	N/A

9. Operating Mode	10. Power Level
Mode 4	0

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

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Scott Bowman	423.843.6910

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		15. Expected Submission Date	Month	Day	Year
☒ No	☐ Yes (If yes, complete 15. Expected Submission Date		N/A	N/A	N/A

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On April 11, 2023, with Unit 2 in Mode 5, a surveillance instruction (SI) associated with the ice condenser intermediate deck doors was completed by Maintenance Services personnel and provided to Operations personnel for review. Personnel from both groups failed to recognize that the acceptance criteria associated with four ice condenser intermediate deck doors were not met. At 2035 eastern daylight time, the unit entered a Technical Specification (TS) Limiting Condition for Operation (LCO) 3.6.13 applicable mode, Mode 4, with four inoperable intermediate deck doors. Because SQN Unit 2 entered an applicable mode without meeting TS LCO 3.6.13, this is a condition prohibited by TS and is therefore being reported 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.

The cause of the event was an error trap in the SI procedure, in that, the acceptance criteria in the SI procedure were not distinct for the particular door being tested to alert the performer and the reviewer of the acceptable values. The corrective action was to revise the SI procedure to remove the error trap by listing the specific acceptance criteria to each door being surveilled.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Sequoyah Nuclear Plant, Unit 2	☒ 050 ☐ 052	00328	2023	- 001	- 00

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I. Plant Operating Conditions before the Event

At the time of discovery, Sequoyah Nuclear Plant (SQN) Unit 2 was in Mode 3.

II. Description of Event

A. Event Summary:

On April 11, 2023, with Unit 2 in Mode 5, a surveillance instruction (SI) associated with Technical Specification (TS) 3.6.13, Ice Condenser Doors, was completed by Maintenance Services personnel and provided to Operations personnel for review. Personnel from both groups failed to recognize that the acceptance criteria associated with four ice condenser [EIIS: BC] intermediate deck doors [EIIS: DR] (the ice condenser has 24 bays, and each bay has 8 intermediate deck doors) were not met (Door 2 in ice condenser bays 13, 15, 16, and 17).

On April 14, 2023, at 1130 eastern daylight time (EDT), with the unit in Mode 4, main control room (MCR) operators were made aware that the acceptance criteria associated with the four intermediate deck doors were not met. Upon notification, MCR operators entered SQN Unit 2 into TS 3.6.13, Ice Condenser Doors, Limiting Condition for Operation (LCO), Condition B and completed Required Action B.1 that verifies the maximum ice bed temperature is less than or equal to 27 degrees Fahrenheit (F). Additionally, MCR operators authorized a conditional performance of the SI to verify the lifting force of the four intermediate deck doors was acceptable. At 1446, the acceptance criteria were determined to be met and TS LCO 3.6.13 Condition B was exited.

Surveillance Requirement (SR) 3.6.13.6 requires verification that each intermediate deck door is free of movement. According to the SR 3.6.13.6 Bases, the intermediate deck door lifting force for Door 2 should be less than or equal to 33.8 pounds. The SR is applicable in Modes 1, 2, 3, and 4.

According to LCO 3.0.4, when an LCO is not met, entry into a Mode or other specified condition in the Applicability shall only be made: a. when the associated Actions to be entered permit continued operation in the Mode or other specified condition in the Applicability for an unlimited period of time; b. after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the Mode or other specified condition in the Applicability, and establishment of risk management actions, if appropriate (exceptions to this Specification are stated in the individual Specifications); or c. when an allowance is stated in the individual value, parameter, or other Specification. Contrary to the above, on April 11 at 2035, the unit entered a

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TS LCO 3.6.13 applicable mode, Mode 4, with four inoperable intermediate deck doors (their lifting force exceeded 33.8 pounds).

Because SQN Unit 2 entered an applicable mode without meeting TS LCO 3.6.13, this is a condition prohibited by TS and is therefore being reported 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.

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

Four ice condenser intermediate deck doors were inoperable and contributed to the event.

C. Dates and approximate times of occurrences:

Date/Time (EDT)	Description
04/11/23, 1000	The SI for the intermediate deck doors was completed with four doors exceeding their acceptance criteria. Maintenance Services personnel failed to recognize the acceptance criteria had been exceeded.
1120	A senior reactor operator (SRO) reviewed the SI and failed to recognize the acceptance criteria had been exceeded.
2035	SQN Unit 2 entered Mode 4.
04/12/23, 0908	An independent reviewer, of the SI, failed to recognize the acceptance criteria had been exceeded.
04/14/23, 1130	MCR operators were made aware that four intermediate deck doors had exceeded their acceptance criteria and entered SQN Unit 2 into TS LCO 3.6.13 Condition B.
1446	A conditional performance of the SI was completed with the acceptance criteria determined to be met and TS LCO 3.6.13 Condition B was exited.

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

There were no failed components related to this event.

E. Other systems or secondary functions affected

No other systems or secondary functions were affected.

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

The SQN NRC Resident Inspector conducted a review of the SI and identified the failed acceptance criteria. The inspector then notified Operations personnel.

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

There were no components that failed during the event.

H. Operator actions

Upon notification, MCR operators entered SQN Unit 2 into TS LCO 3.6.13 Condition B and completed Required Action B.1 that verifies the maximum ice bed temperature is less than or equal to 27 degrees Fahrenheit (F). Additionally, MCR operators verified, through conditional performance of the SI, the lifting force of the four intermediate deck doors met the acceptance criteria.

I. Automatically and manually initiated safety system responses

There were no automatic or manual safety system responses associated with this event.

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 and communications. The acceptance criteria in the SI procedure were not distinct for the particular door being tested to alert the performer (Maintenance Services) and the reviewer (SRO) of the acceptable values. Different doors had different acceptance criteria and the procedure could have better specified the applicable acceptance criteria for each door. The communication gap was due to the missed hand-off between the performer of the SI and the SRO review for completeness of information vice a review for accuracy.

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

The cause of the event was an error trap in the SI procedure, in that, the acceptance criteria in the SI procedure were not distinct for the particular door being tested to alert the performer and the reviewer of the acceptable values.

Personnel involved were from the Operations and Maintenance Services groups. The Operations personnel were NRC licensed, TVA employees. The Maintenance Services

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personnel were non-licensed supplemental workers. There were no schedule or situational pressures present.

IV. Analysis of the event

The ice bed consists of a minimum of 1,916,000 pounds of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a design basis accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA. The ice condenser doors ensure that the ice stored in the ice bed is preserved during normal operation and that the ice condenser functions as designed if called upon to act as a passive heat sink following a DBA. In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment.

The Unit 2 ice bed remained below 27 degrees F and remained capable of performing its required safety function to provide a heat sink during a DBA in containment.

V. Assessment of Safety Consequences

There were no actual safety consequences as a result of this event. There are a total of 192 intermediate deck doors and in this event only four doors were affected. The engineering procedure associated with Maintenance Rule performance indicator monitoring and reporting indicates that a functional failure of the ice condenser would require either 25 or more intermediate deck doors or 7 or more intermediate deck doors within any 24 contiguous doors to be blocked. Therefore, with only four intermediate deck doors inoperable, the ice condenser would still have been functional and able to mitigate any DBA.

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

The intermediate deck doors are associated with the ice condenser. With 188 doors operable, the ice condenser was fully functional during the event.

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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 intermediate deck doors are associated with the ice condenser. With 188 doors operable, the ice condenser was fully functional during the event.

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

The four intermediate deck doors were inoperable for approximately 65 hours.

VI. Corrective Actions

Corrective Actions are being managed by the TVA's corrective action program under Condition Report (CR) 1849888.

A. Immediate Corrective Actions

MCR operators verified, through conditional performance of the SI, the lifting force of the four intermediate deck doors met the acceptance criteria. Additionally, action was taken to complete TS LCO 3.6.13, Required Action B.1 that verifies the maximum ice bed temperature is less than or equal to 27 degrees Fahrenheit (F).

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

The corrective action was to revise the SI procedure to remove the error trap by listing the specific acceptance criteria to each door being surveilled. Additionally, coaching was provided to the SI performers as well as the reviewer. Learnings were shared with the Operations peer team and Maintenance Services via the Nuclear Fleet Learning process.

VII. Previous Similar Events at the Same Site

LER 327 and 328/2021-003 was submitted for exceeding an auxiliary building secondary containment enclosure (ABSCE) breach margin. The human performance factors related to the event were associated with the procedure and communications and involved the Maintenance Services and Operations personnel. The corrective action involved revising the ABSCE breaching procedure.

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VIII. Additional Information

There is no additional information.

IX. Commitments

There are no new commitments.