



June 30, 2023

Docket No. 50-443
L-2023-085
10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: Seabrook Station
Docket No. 50-443
Reportable Event: 2023-002-00
Date of Event: May 2, 2023

Automatic Actuation of Emergency Service Water due to a Defective Relay

The attached Licensee Event Report 2023-002 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event. If you have any questions, please contact Mr. Kenneth Mack, Fleet Licensing Manager, at 561-904-3635.

Respectfully,

A handwritten signature in black ink, appearing to read "Dianne Strand".

Dianne Strand General Manager, Regulatory Affairs

Attachment

cc: Seabrook Station NRC Senior Resident Inspector
Seabrook Station NRC Project Manager



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/>)

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, Library, and Information Collections Branch (T-6 A10M), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to Infocollections.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; email: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name Seabrook Station	<input checked="" type="checkbox"/> 050 <input type="checkbox"/> 052	2. Docket Number 00443	3. Page 1 OF 3
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4. Title
Automatic Actuation of Emergency Service Water during Testing due to a Defective Relay

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
05	02	2023	2023	002	00	06	30	2023	NA	<input type="checkbox"/> 050
									NA	<input type="checkbox"/> 052

9. Operating Mode 5 **10. Power Level** 000

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

<input type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 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"/> 73.1200(a)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<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"/> 73.1200(b)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<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)	<input type="checkbox"/> 73.1200(c)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.1200(d)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input checked="" type="checkbox"/> 10 CFR Part 21	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input checked="" type="checkbox"/> 10 CFR Part 73	<input type="checkbox"/> 73.1200(e)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.77(a)(1)	<input type="checkbox"/> 73.1200(f)
<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(2)(i)	<input type="checkbox"/> 73.1200(g)
<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)	<input type="checkbox"/> 73.1200(h)
<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)		

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

12. Licensee Contact for this LER

Licensee Contact Bob Murrell, Licensing Engineer	Phone Number (Include area code) 319-651-9496
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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
X	JE	2	W120	Y					

14. Supplemental Report Expected <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)	15. Expected Submission Date Month: Day: Year:
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16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On May 2, 2023, during planned Engineered Safety Features Actuation System Testing, a Tower Actuation (TA) signal occurred. The TA occurred due to the failure of the first level undervoltage load shedding scheme to shed loads from the 4KV bus prior to the Service Water (SW) Ocean Pumps coasting down following the opening of the 4KV supply breaker. With no power to the bus, and the SW Ocean Pumps breakers still closed, a low SW pump discharge pressure condition occurred, resulting in the TA logic being satisfied. Troubleshooting determined that a defective relay contact in the first level undervoltage load shedding scheme caused the failure. The relay was replaced, and the system was returned to service. There was minimal impact to the station due the unplanned actuation, therefore this event had no impact on the health and safety of the public. In addition, there were no other Structures, Systems, or Components (SSCs) that contributed to this event. This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A) for actuation of the emergency service water system that does not normally run that serves as the ultimate heat sink.



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

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1. FACILITY NAME Seabrook Station	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER 00443	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR 2023	SEQUENTIAL NUMBER 002	REV NO. 00

NARRATIVE

Description

On May 2, 2023, the plant was in Mode 5 at 0 percent power with coolant temperature less than 200 degrees fahrenheit and depressurized, during planned Engineered Safety Features Actuation System (ESFAS) [EIS: JE] testing, a Tower Actuation (TA) signal occurred. A TA signal is initiated to transfer Service Water (SW) (EIS: BI) from the ocean when one of two ocean pumps [EIS: P] is running (in a train) with pump discharge pressure below the low pressure TA setpoint. The TA signal is time delayed by 3 seconds to prevent spurious operation.

During the planned ESFAS testing, the combination of a loss of offsite power to the 4 KV bus [EIS: BU], and Safety Injection (SI) is simulated by simultaneous removal of the safeguards bus protection relay fuses [EIS: FU], with the actuation of a SI signal. Removal of the bus protection fuses de-energizes both the first and second level undervoltage relay schemes, which also inputs to the Emergency Power Sequencer (EPS). The EPS opens the offsite power source breaker [EIS: BKR] to the 4 KV bus. The undervoltage schemes shed the loads from the bus.

Troubleshooting determined that the load shedding did not occur at the expected time delay (1.2 seconds) associated with the first level undervoltage protection. Instead load shedding occurred at 6 seconds after the test initiation. Six seconds is the time delay associated with load shedding on a second level undervoltage relay actuation coincident with a SI signal present. The Ocean SW pumps remained connected to the 4KV bus for 6 seconds following initiation of the test. With the offsite power supply removed, the pumps coasted down resulting in discharge pressure continuing to decrease to the tower actuation setpoint prior to 6 seconds.

The Tower actuation occurred due to the failure of the first level undervoltage load shedding scheme to shed loads from the 4KV bus prior to the SW Ocean Pumps coasting down following the opening of the 4KV Bus supply breaker. With no power to the bus, and the SW Ocean Pump breakers still closed, combined with the subsequent low SW pump discharge pressure, the Tower Actuation logic was satisfied. Troubleshooting determined that a defective relay contact in the first level undervoltage load shedding scheme caused the failure. The relay was replaced, and the system was returned to service.

Cause of the Event

Complex troubleshooting was performed in accordance with station processes. As part of the troubleshooting, the cause of this event was determined to be a failure of a relay contact in the load shedding circuit. The relay was made by Westinghouse and is a time delay starting relay.

Analysis of the Event

This licensee event report is being reported pursuant of 10 CFR 50.73(a)(2)(iv) for actuation of emergency service water system that does not normally run and that serves as ultimate heat sinks. This event did not result in a Safety System Functional Failure.

Safety Significance

There were no safety consequences due to this event. This event had no impact on the health and safety of the public. In addition, there were no other Structures Systems or Components (SSCs) that contributed to this event.



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	<input type="checkbox"/> 052		YEAR 2023	SEQUENTIAL NUMBER 002	REV NO. 00

NARRATIVE

Corrective Actions

The defective relay was replaced and the testing was performed satisfactorily the next day.

Similar Events

A review of reportable events dating back 10 years, did not identify any previous events or conditions that involved the same underlying cause as this event.