Dominion Energy Nuclear Connecticut, Inc.
Millstone Power Station
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No.: 23-307
MPS Lic/JP R0
Docket No.: 50-423
License No.: NPF-49

DEC 0 8 2023

DOMINION ENERGY NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
LICENSEE EVENT REPORT 2023-003-00

RCS TEMPERATURE DETECTOR EXCEEEDED TIME RESPONSE ACCEPTANCE CRITERIA RESULTING IN A CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS

This letter forwards Licensee Event Report (LER) 2023-003-00, documenting a condition that was discovered at Millstone Power Station Unit 3 (MPS3) on October 11, 2023. This LER is being submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by technical specifications.

There are no regulatory commitments contained in this letter or its enclosure.
Should you have any questions, please contact Mr. Dean E. Rowe at (860) 444-5292.

Sincerely,

Michael J. O'Connor
Site Vice President – Millstone

Enclosure: LER 423/2023-003-00

cc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road, Suite 102,
King of Prussia, PA 19406–1415.

R. V. Guzman
NRC Project Manager Millstone Units 2 and 3
U.S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 08 C2
11555 Rockville Pike
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NRC Senior Resident Inspector
Millstone Power Station

ATTACHMENT

LICENSEE EVENT REPORT 2023-003-00

RCS TEMPERATURE DETECTOR EXCEEEDED TIME RESPONSE ACCEPTANCE CRITERIA RESULTING IN A CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS

MILLSTONE POWER STATION UNIT 3
DOMINION ENERGY NUCLEAR CONNECTICUT, INC.

NRC FORM 366 (10-01-2023) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2024

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
Millstone Power Station - Unit 3	☒ 050 ☐ 052	423	1 OF 3

4. Title

RCS Temperature Detector Exceeded Time Response Acceptance Criteria Resulting in a Condition Prohibited by TS

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	☐ 050	Docket Number
10	11	2023	2023	- 003 -	00	12	08	2023	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
1	100

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)
Dean E. Rowe, Manager Nuclear Emergency Preparedness and Licensing	860-444-5292

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
B	AB	TI	W108	Y						

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

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

On October 11, 2023 at 1252 hours, with Millstone Power Station Unit 3 in Mode 1 at 100 percent reactor power, it was identified during technical specification required response time testing that one of three reactor coolant system (RCS) loop 4 narrow range hot leg resistance temperature detector (RTD), 3RCS*TE441C, did not meet its response time acceptance criteria. Investigation revealed that this condition had existed for the operating cycle. 3RCS*TE441C was found not fully inserted into the thermowell due to a loose coupling nut. The RTD was successfully replaced, calibrated, and response time tested. This condition is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) as any operation or condition prohibited by the plant's Technical Specifications.

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.
Millstone Power Station - Unit 3	■ 050 ☐ 052	423	2023	- 003	- 00

NARRATIVE

On October 11, 2023 at 1252 hours, with Millstone Power Station Unit 3 in Mode 1 at 100 percent reactor power, it was identified during response time testing in accordance with surveillance SP 3443E42, "Rakset 4 RCS Narrow Range RTD Time Response", that the reactor coolant system (RCS) loop 4 narrow range hot leg resistance temperature detector (RTD), 3RCS*TE441C, did not meet its response time acceptance criteria. AOP 3571, "Abnormal Operating Procedure", was entered at 1427 hours and the actions of Attachment A, "RCS Narrow Range Temperature Channel Failure", were performed. Technical Specification (TS) 3.3.1 action 6A and TS 3.3.2 action 20 were entered and the associated reactor protection system (RPS) bistables were placed in the trip condition. Required TS actions were completed on October 11, 2023 at 1517 hours.

The temperature indicated by 3RCS*TE441C (Computer Point RCS-T441G) was consistent with the other two narrow range hot leg RTDs in loop 4. The trend of 3RCS*TE441C indicated diminished variation compared to other 11 narrow range hot leg temperature computer points beginning in June of 2022. Based on this trend it was determined that the 3RCS*TE441C slow response time had existed for longer than allowed by plant's technical specifications.

On October 16 2023 at 1638, in accordance with SP 3442B04, "Hot Leg RTD Failure Compensation Procedure", 3RCS*TE441C was removed from the circuit and in its place, a biased average of the other two RTDs was inserted. The remaining two hot leg RTDs plus the biased signal returned the loop to operable, and bistables were restored to service. TS 3.3.1 action 6A and TS 3.3.2 action 20 were exited.

During the Millstone Unit 3 refueling outage in October 2023, 3RCS*TE441C was found not fully inserted into its thermowell. The RTD was successfully replaced, calibrated, and response time tested in accordance with of surveillance SP 3443E42.

Technical Specification 3.3.1 action 6A for Mode 1 and 2 states that with the number of operable channels one less than the total number of channels, during startup and/or power operation, may proceed provided following conditions are satisfied. (a) The inoperable channel is placed in tripped condition within 72 hours and (B) minimum channel operable requirement is met.

Technical Specification 3.3.2 action 20 for Mode 1 and 2 states that with the number of operable channels one less than the total number of channels, during startup and/or power operation, may proceed provided following conditions are satisfied. (a) The inoperable channel is placed in tripped condition within 6 hours and (B) minimum channel operable requirement is met.

This condition is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's technical specifications.

CAUSE

3RCS*TE441C was found not fully inserted into the thermowell due to a loose coupling nut. The cause of the coupling nut becoming loose is unknown.

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NARRATIVE

ASSESSMENT OF SAFETY CONSEQUENCES

The RCS has three thermowells on each of the four reactor coolant system hot leg loops, and each thermowell houses one dual-element resistance temperature detector (RTD). 3RCS*TE441C senses narrow range hot leg temperature in conjunction with 3RCS*TE441A and 3RCS*TE441D. All three hot leg RTDs, along with a single RTD located in the cold leg of the same RCS loop feed into delta T and Tavg circuitry, in this case supplying signals to RAKSET 4. If 3RCS*TE441C is deemed inoperable, the entire Delta T/Tavg protection circuit would be impacted in RAKSET 4 potentially impacting the response of the overpower delta T (OPΔT) and overtemperature delta T (OTΔT) trip functions.

Each of the other 3 RCS loops have identical and independent instrumentation to the other 3 protection channels. A reactor trip is generated when 2 of the 4 independent channels reach a trip condition.

Most of the Chapter 15 safety analysis events that credit the action of the OPΔT or OTΔT trips are symmetric events in which the behavior of each RCS loop is essentially identical to the behavior of the other RCS loops. In these cases, the potentially degraded behavior of the single loop containing 3RCS*TE441C would not affect the timing of a reactor trip.

For events that do not have symmetric loop behavior, the main steam line break (MSLB) shows the greatest loop to loop differences in temperature response. The event presented in Chapter 15 of the final safety analysis report (FSAR) is the limiting MSLB event which is initialized from zero power conditions. As part of the sensitivity studies confirming the limiting nature of the zero power case, an analysis was performed to demonstrate that the MSLB initiated from full power conditions was less limiting. This full power analysis examined a spectrum of break sizes, some of which resulted in an OPΔT trip to terminate the event.

As expected, the OPΔT RCS loop with the break reached the trip condition first. However, as this is just a single channel, a reactor trip did not occur. Of the remaining 3 loops, the next two fastest responding reached an OPΔT condition within 0.1 seconds of each other. Therefore, assuming a break occurs in the steam line attached to the RCS loop with 3RCS*TE441C invalidating that loops OPΔT trip, an OPΔT trip would be delayed at most 0.1 seconds until the next two loops were both in a tripped condition. There is more than adequate margin between the hot full power case results and the event acceptance criteria that the zero power case presented in the FSAR would still be limiting.

Therefore, the safety functions provided by the temperature inputs to the reactor protection system was maintained despite the single hot leg RTD, 3RCS*TE441C, not meeting its response time acceptance criteria.

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NARRATIVE

CORRECTIVE ACTIONS

The RTD was successfully replaced, calibrated and response time tested in accordance with the requirements of surveillance SP 3443E42. Additional corrective actions will be taken in accordance with the station's corrective action program.

PREVIOUS OCCURRENCES

There have been no similar events or conditions related to RCS narrow range temperature channels inoperable for longer than the technical specification allowed outage time over the last 5 years.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

AB Reactor Coolant System
TI Temperature Indicator
TW Thermowell