VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

10CFR50.73

Virginia Electric and Power Company
North Anna Power Station
1022 Haley Drive
Mineral, Virginia 23117

November 30, 2023

Attention: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Serial No.: 23-321
NAPS: RAP
Docket Nos.: 50-339
License Nos.: NPF-7

Dear Sir or Madam:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Power Station Unit 2.

Report No. 50-339/2023-001-00

This report has been reviewed by the Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

Sincerely,

Lisa Hilbert
Site Vice President
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector
North Anna Power Station

IE22
NRR

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
North Anna Power Station	■ 050 ☐ 052	00339	1 OF 3

4. Title

Reactor Coolant Pressure Boundary Leak Due to Poor Weld Workmanship

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	03	2023	2023	- 001 -	00	11	30	2023	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
6	000

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)
Lisa Hilbert, Site Vice President	(540) 894-2101

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
A	AB	TBG	–	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 September 11, 2023, at 1558 hours with Unit 2 in Mode 5 at 140 degrees F and 30 psig for a refueling outage, a boric acid leak was discovered on tubing associated with a Pressurizer level transmitter. The leak was not quantifiable as it consisted of a small amount of dry boric acid. Non-destructive examination (NDE) was performed on the leak to determine if it was a through wall leak. On October 3, 2023, at 1154 with Unit 2 in Mode 6 at 100 degrees F and atmospheric pressure, the NDE determined the leak was a through wall leak. This failure constitutes welding or material defects in the primary coolant system that cannot be found acceptable under ASME Section XI. Therefore, an 8-hour report was made for a degraded condition under 10 CFR 50.72(b)(3)(ii)(A).

The direct cause of the weld failure was due to inadequate welding process control by the welder. Unit 1 was not impacted by this event. The health and safety of the public were not affected by this event.

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.
North Anna Power Station	■ 050 ☐ 052	00339	2023	- 001	- 00

NARRATIVE

1.0 Description of Event

On September 11, 2023, at 1558 hours with Unit 2 in Mode 5 at 140 degrees F and 30 psig for a refueling outage, a boric acid leak was discovered on tubing associated with a Pressurizer (EIIS Component PZR, System AB) level transmitter (EIIS Component LT, System AB). The leak was not quantifiable as it consisted of a small amount of dry boric acid. Non-destructive examination (NDE) was performed on the leak to determine if it was a through wall leak. On October 3, 2023, at 1154 with Unit 2 in Mode 6 at 100 degrees F and atmospheric pressure, the NDE determined the leak was a through wall leak. This failure constituted welding or material defects in the primary coolant system that cannot be found acceptable under ASME Section XI. Therefore, an 8-hour report was made for a degraded condition under 10 CFR 50.72(b)(3)(ii)(A). This weld was part of an instrument tubing design change that was implemented in 1998.

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from this event. The leak was discovered while Unit 2 was shut down for a refueling outage. The leak was not quantifiable based on the small amount of boric acid noted and, therefore, well within the capability of one charging pump (EIIS Component P, System CB). The health and safety of the public were not affected by this event.

3.0 Cause of the Event

The direct cause of the weld failure was due to inadequate welding process control by the welder. The specific socket welds in question exhibited poor workmanship by having a large degree of melt-through and suck-back on the inside surface, and multiple arc strikes and excessive grinding on the outside surface. During the metallurgical failure analysis, the sample was sectioned through the area of suspected leakage, which revealed a lack of fusion defect between the weldment and base metal. The degree of lack of fusion confirmed in the laboratory analysis was substantial enough to provide the eventual leak path after a 25-year service period.

4.0 Immediate Corrective Action

Both the leaking socket welded coupling and a non-leaking downstream socket welded coupling were replaced. NDE surface examinations were performed on the replacement socket welds, and the area was also examined during an external leakage check.

5.0 Additional Corrective Actions

Additional Liquid Penetrant (LP) exams were performed on tubing welds from the pressurizer steam space to a different Pressurizer level transmitter. No weld flaws or boric acid residue was identified during these examinations. For the next refueling outages for each unit, work orders have been created to inspect tubing socket welds that were fabricated in a similar timeframe, under similar field conditions, using the same welding and inspection procedures, and had an overlap of qualified welders performing the work.

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/)

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

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
North Anna Power Station	■ 050 ☐ 052	00339	2023	- 001	- 00

NARRATIVE

6.0 Actions to Prevent Recurrence

Nuclear Welding Program Authorized By training will be updated to include this operating experience (OE) of workmanship issues when welding tubing.

7.0 Similar Events

No similar events have been noted at North Anna for instrument tube welding failures.

8.0 Additional Information

Unit 1 was unaffected by this event.