



Post Office Box 2000, Decatur, Alabama 35609-2000

September 18, 2023

10 CFR 50.73

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

Browns Ferry Nuclear Plant, Unit 2  
Renewed Facility Operating License No. DPR-52  
NRC Docket No. 50-260

Subject: **Licensee Event Report 50-260/2023-001-01**

References: 1. Non-Emergency Event Notification 56371 – Degraded Condition  
2. Letter from TVA to NRC, "Licensee Event Report 50-260/2023-001-00", dated April 19, 2023 (ML23109A362)

The enclosed Licensee Event Report provides details of a pressure boundary leak on Browns Ferry Nuclear Plant, Unit 2. The Tennessee Valley Authority is submitting this report in accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's Technical Specifications; and 10 CFR 50.73(a)(2)(ii)(A), as any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded.

There are no new regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact David J. Renn, Nuclear Site Licensing Manager, at (256) 729-2636.

Respectfully,

A handwritten signature in black ink, appearing to read 'Manu Sivaraman', is written over a white background.

Manu Sivaraman  
Site Vice President

Enclosure: Licensee Event Report 50-260/2023-001-01 – Pressure Boundary Leak on Recirculation Pump Discharge Isolation Valve Drain Line Due to Fatigue Failure

cc (w/ Enclosure):

U.S. Nuclear Regulatory Commission  
Page 2  
September 18, 2023

NRC Regional Administrator - Region II  
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant  
NRC Project Manager - Browns Ferry Nuclear Plant

**ENCLOSURE**

**Browns Ferry Nuclear Plant  
Unit 2**

**Licensee Event Report 50-260/2023-001-01**

**Pressure Boundary Leak on Recirculation Pump Discharge Isolation Valve Drain Line Due to Fatigue  
Failure**

---

**See Enclosed**



**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/nureqs/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 [Infocollects.Resource@nrc.gov](mailto:Infocollects.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: [oira\\_submission@omb.eop.gov](mailto:oira_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.

<b>1. Facility Name</b> Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> <b>050</b>	<b>2. Docket Number</b> 00260	<b>3. Page</b> 1 OF 8
	<input type="checkbox"/> <b>052</b>		

**4. Title**  
Pressure Boundary Leak on Recirculation Pump Discharge Isolation Valve Drain Line Due to Fatigue Failure

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	<input type="checkbox"/> 050	Docket Number
02	18	23	2023	001	01	09	18	23	N/A	<input type="checkbox"/> 050	N/A
									N/A	<input type="checkbox"/> 052	N/A

<b>9. Operating Mode</b> Mode 4	<b>10. Power Level</b> 0
------------------------------------	-----------------------------

**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 type="checkbox"/> 10 CFR Part 50	<input checked="" 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 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)	<b>10 CFR Part 21</b>	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<b>10 CFR Part 73</b>	<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 checked="" 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 Baruch Calkin, Site Licensing Engineer	Phone Number (Include area code) (256) 278-1031
--	--

**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

<b>14. Supplemental Report Expected</b>					<b>15. Expected Submission Date</b>		
<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)				Month	Day	Year
					N/A	N/A	N/A

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

On February 17, 2023, during a drywell entry for leak identification, Browns Ferry Nuclear Plant (BFN) personnel discovered a cracked weld on the 2A Recirculation Pump discharge isolation valve drain line. On February 18, 2023, at 0439 Central Standard Time (CST), it was determined that this drain line was classified as American Society of Mechanical Engineers Code Class I piping and constitutes part of the BFN, Unit 2 Reactor Coolant System (RCS) pressure boundary. On February 18, 2023, at 1025 CST, eight-hour Event Notification 56371 was made to the NRC. On March 19, 2023, work was completed to remove and replace the drain line.

The root cause of this event was that small bore piping was not analyzed for vulnerability of fatigue failure due to operational or resonance vibration. Corrective actions are to implement changes that will result in bounded life cycles for all levels of vibrational stress that the piping will experience; and to implement additional actions, for Unit 2 systems where failure of small bore branch piping would cause a unit shutdown or loss of RCS boundary, to modify the operating ranges of the system and/or the piping assembly. TVA has concluded that sufficient systems were available to provide the required safety functions needed to protect the health and safety of the public.



**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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oir\\_submission@omb.eop.gov](mailto: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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

**I. Plant Operating Conditions before the Event**

At the time of discovery, Browns Ferry Nuclear Plant (BFN) Unit 2 was in Mode 4 at approximately zero percent power.

**II. Description of Event**

**A. Event Summary**

On February 17, 2023, during a drywell entry for leak identification, BFN personnel discovered a cracked weld on the 2A Recirculation Pump [AD] discharge isolation valve [ISV] drain line [PSF]. On February 18, 2023, at 0439 Central Standard Time (CST), it was determined that this drain line was classified as American Society of Mechanical Engineers (ASME) Code Class I piping and constitutes part of the BFN, Unit 2 Reactor Coolant System (RCS) pressure boundary. Operations personnel maintained BFN, Unit 2 in Mode 4 or 5 until the leak was repaired. On February 18, 2023, at 1025 CST, eight-hour Event Notification 56371 was made to the NRC. On March 19, 2023, work was completed to remove and replace the drain line.

The TVA is submitting this report in accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's Technical Specifications (TS); and 10 CFR 50.73(a)(2)(ii)(A), as any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded.

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

There were no structures, systems, or components (SSCs) whose inoperability contributed to 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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oir\\_submission@omb.eop.gov](mailto: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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

**C. Dates and approximate times of occurrences**

Date	Time (CST)	Occurrence
February 18, 2023	0439	Determined that leaking piping was ASME Code Class I.
February 18, 2023	1025	Made eight-hour EN 56371 to NRC.
March 14, 2023	1611	Completed WO 123487635 to repair leaking drain line.
March 19, 2023	2342	Declared BFN Unit 2 RCS structural integrity operable

**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.

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

During the planned outage on BFN Unit 2, personnel entered the drywell for leak identification and discovered a cracked weld on the 2A Recirc pump discharge isolation valve drain line. An engineering evaluation determined this line to be ASME Code Class I Piping.

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

Testing performed by Westinghouse determined that, for a previous similar event on BFN Unit 1, the pipe failed due to vibration induced high cycle fatigue originating at the outside diameter of the pipe where the valve and socket welds overlap. A Significant Issue Gap Analysis (SIGA) concluded that the piping involved in this event most likely failed by the same mechanism.



**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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oir\\_submission@omb.eop.gov](mailto: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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

**H. Operator actions**

There were no operator actions related to this event.

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

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

**III. Cause of the event**

The root cause of this event was that small bore piping was not specifically analyzed for vulnerability of fatigue failure due to operational or resonance vibration. During original plant design, there was not an accurate method for modeling or collecting vibration data in order to evaluate the effects on small bore piping. When data collection became available, this branch line was erroneously excluded from further evaluation.

Additionally, the following contributing cause was identified for this event:

During evaluations performed during Extended Power Uprate (EPU), the small bore piping was considered rigid in the seismic calculation, which are typically limited to frequencies below 35 Hz, and therefore did not need to be modeled separately from the large bore piping. That assessment was carried into the vibration acceptance calculation, and then into the vibration analysis report as the basis for acceptability of the measured vibration. This resulted in small bore piping not being evaluated independently from the large bore piping during EPU testing. When modeled independently with an accurate fatigue stress input, bounded vibration cycles no longer apply. The design calculation failed to identify that the stress caused by flow induced resonance vibration at Recirculation System [AD] Pump speeds between 1500 and 1600 rpm was sufficient to exceed the endurance limit for the failed pipe assembly.

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

There were no component failures, system failures, or personnel errors associated with 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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oira\\_submission@omb.eop.gov](mailto:oira_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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

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

There were no human performance related root causes associated with this event.

**IV. Analysis of the event**

The Radioactive Material Barrier is the systems, structures, or equipment that, together, physically prevent the uncontrolled release of radioactive materials. One of these is the Nuclear System Process Barrier, made up of a Primary Barrier and a Secondary Barrier, which includes the systems of vessels, pipes, pumps, tubes, and similar process equipment that contain the steam, water, gases, and radioactive materials coming from, going to, or in communication with the reactor core. The Primary Barrier, also known as the Reactor Coolant Pressure Boundary, consists of the reactor vessel and attached piping out to and including the second isolation valve in each attached pipe. A leak in the Pressure Boundary is therefore a degradation of one of the nuclear power plant's principal safety barriers.

BFN, Unit 2 TS Limiting Condition for Operation (LCO) 3.4.4, RCS Operational Leakage, requires that there be no pressure boundary leakage while in Modes 1, 2, or 3. TS LCO 3.4.4 Condition C requires, when any pressure boundary leakage exists, that the unit be in Mode 3 within twelve hours, and Mode 4 within thirty-six hours. A Past Operability Evaluation (POE) determined that this condition is likely to have existed since November 13, 2022, when an increase in unidentified drywell leakage from the RCS was detected. Pressure boundary leakage likely existed from this time until February 17, 2023, when BFN, Unit 2 was placed in Mode 4.

**V. Assessment of Safety Consequences**

The POE for this event determined that the safety significance was low because, per Calculation MDQ0999950033 Rev. 3, "Exclusion Criteria for ISI Scope", the normal reactor coolant makeup systems, Reactor Core Isolation Cooling, Feedwater, and Control Rod Drive, have adequate capacity to makeup reactor coolant in the worst-case scenario of a small break Loss of Coolant Accident (LOCA). Additionally, Calculation NDQ0074880118 Rev.8, "Evaluation of LPCI Flow to RPV with Failed Open Min Flow Bypass Valve" shows that the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) system can still meet the required LPCI flow to the RPV in the worse-case scenario of a small break LOCA for the duration of its mission time.





**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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oir\\_submission@omb.eop.gov](mailto: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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

During this time the High Pressure Coolant Injection system [BJ], both loops of the Core Spray system (CS) [BG], and all Automatic Depressurization System valves remained operable when required, aside from periods of planned maintenance and testing, and were available to provide coolant flow to the core during an emergency.

Based on the above, the TVA has concluded that sufficient systems were available to provide the required safety functions needed to protect the health and safety of the public.

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

There were no systems or components other than the RCS Pressure Boundary that failed during the event.

**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**

During the period concurrent with this event where BFN, Unit 2 was in Mode 4 or Mode 5, all systems or components required 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 in Mode 4 or Mode 5 remained operable, aside from periods of planned maintenance and testing.

**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**

This event did not result in the inoperability of any safety system train.

**VI. Corrective Actions**

Corrective Actions are being managed by the TVA's corrective action program under Condition Reports (CRs) 1836572 and 1747875.



**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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oira\\_submission@omb.eop.gov](mailto:oira_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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

**A. Immediate Corrective Actions**

The immediate corrective action for this event was to repair the valve's drain line under Work Order 123487635.

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

1. Implement an Engineering Change Package (ECP) for the test line that will result in bounded life cycles for all levels of stress that the piping assembly will experience.
2. Implement additional actions for Unit 2 systems containing small bore branch piping that would cause a unit shutdown or loss of RCS boundary if it failed, to either modify operating ranges of the system or modify the piping assembly or both if the natural frequency of the piping assembly is within the operating vibration band of the piping assembly or if the operating vibration level exceeds the acceptable vibration level.

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

There are two similar events which have occurred at BFN within the last two years:

1. On January 15, 2022, at 2320 CST, during a drywell entry for leak identification, BFN Engineering personnel discovered a through-wall piping leak on a test line upstream of the RHR and Shutdown Cooling DC test shut-off valve. This test line is classified as ASME Code Class 1 piping and constitutes part of the BFN, Unit 1 RCS pressure boundary. Operations personnel declared the BFN, Unit 1 system LPCI Loop I inoperable and maintained BFN, Unit 1 in Mode 4 or 5 until the leak was repaired. On January 16, 2022, at 0541 CST, eight-hour EN 55706 was made to the NRC. The test line was cut and capped pending permanent repairs, and on January 20, 2022, at 1520 CST, BFN, Unit 1 LPCI Loop I was declared operable.

This event was reported to the NRC under Licensee Event Report (LER) 50-259/2022-001-01 - Pressure Boundary Leak on Residual Heat Removal System Low Pressure Coolant Injection Test Line.



**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/>)

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 e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.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; e-mail: [oir\\_submission@omb.eop.gov](mailto: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  Browns Ferry Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  00260	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

**NARRATIVE**

- On December 2, 2022, at 2330 CST, during a drywell entry for leak identification, BFN Engineering personnel discovered a through-wall piping leak on a test line between the two RHR Shutdown Cooling test line isolation valves. On December 3, 2022, at 1000 CST, it was determined that this test line was classified as ASME Code Class 1 piping and constitutes part of the BFN, Unit 3 RCS pressure boundary. Operations personnel maintained BFN, Unit 3 in Mode 4 or 5 until the leak was repaired. On December 3, 2022, at 1205 CST, eight-hour Event Notification (EN) 56257 was made to the NRC. The test line was cut and capped pending permanent repairs.

This event was reported to the NRC under LER 50-296/2022-003-00 – Pressure Boundary Leak on Residual Heat Removal System Low Pressure Coolant Injection Test Line

The root cause of both of these events was small bore piping which was not specifically analyzed for fatigue failure vulnerability due to operational or resonance vibration. The corrective action for both of these events is to implement ECPs for small bore piping with vulnerability to fatigue failure due to exceeding the endurance limit due to operational vibration.

**VIII. Additional Information**

There is no additional information.

**IX. Commitments**

There are no new commitments.