

Timothy C. Peter
Site Vice President- JAF

JAFP-22-0051
November 30, 2022

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-059
NRC Docket No. 50-333

Subject: LER: 2022-003-00, Safety Relief Valves Lift Setpoint Found Out of
Tolerance Low


Dear Sir or Madam:

This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D).

There are no new regulatory commitments contained in this report.

Questions concerning this report may be addressed to Mr. Mark Hawes, Regulatory Assurance
Manager (Acting), at (315) 349-6659.

Sincerely,



Timothy C. Peter
Site Vice President

TCP/mh

Enclosure: LER: 2022-003-00, Safety Relief Valves Lift Setpoint Found Out of
Tolerance Low

cc: USNRC, Region I Administrator
USNRC, Project Manager
USNRC, Resident Inspector
INPO Records Center (IRIS)



LICENSEE EVENT REPORT (LER)
(See Page 3 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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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, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk all: 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 James A. FitzPatrick Nuclear Power Plant	2. Docket Number 05000333	3. Page 1 OF 4
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4. Title
Safety Relief Valves Lift Setpoint Found Out of Tolerance Low

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
10	01	2022	2022	003	00	11	30	2022	N/A	N/A

9. Operating Mode 5	10. Power Level 000
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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"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	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"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<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"/> 20.2203(a)(2)(v)	<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)	

OTHER (Specify in Abstract below or in NRC Form 366A).

12. Licensee Contact for this LER

Licensee Contact Mr. Mark Hawes, Regulatory Assurance Manager (Acting)	Telephone Number (Include Area Code) 315-349-6659
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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
N/A	SB	RV	T020	Y					

14. Supplemental Report Expected

<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes (If yes, complete 15. Expected Submission date)	15. Expected Submission Date	Month 04	Day 28	Year 2023
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Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

The As-Found test results for eleven Safety/Relief Valve (S/RV) pilot assemblies during the 2022 Refueling Outage at James A. FitzPatrick Nuclear Power Plant (JAF) identified five (5) S/RV pilot assemblies that lifted outside of the allowable tolerance required by Technical Specifications (TS) Surveillance Requirement 3.4.3.1. Five (5) three-stage S/RVs were found out of tolerance low. Therefore, the TS inoperability of the five (5) S/RVs resulted in a reportable condition pursuant to 10 CFR 50.73(a)(2)(v)(D).

This condition did not affect the S/RV safety function to relieve vessel overpressure in accordance with the transient analysis. A low lift setpoint reduces the margin for inadvertent SRV actuation.

The failed S/RV were replaced during the outage. An investigation into the cause of this condition is ongoing and a supplement report will be submitted.



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

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
James A. FitzPatrick Nuclear Power Plant	05000 – 333	2022	– 003	– 00

NARRATIVE

Background

The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requires the reactor pressure vessel be protected from overpressure during upset conditions by self-actuated safety valves. As part of the nuclear pressure relief system, the size and number of Safety/Relief Valves (S/RV) are selected such that peak pressure in the Reactor Coolant Pressure Boundary (RCPB) will not exceed the ASME Code limits.

The James A. FitzPatrick Nuclear Power Plant (JAF) used eleven (11) three-stage Target Rock S/RV [EISI Identifier: SB] for emergency pressure relief during operating Cycle 25. These valves are located on the main steam lines between the reactor vessel and the first isolation valve within the drywell. Each S/RV discharges steam through a discharge line to a point below the minimum water level in the suppression pool.

The S/RVs can actuate by either of two modes: the safety mode or the relief mode. In safety mode (or spring mode of operation), the spring-loaded pilot valve opens when steam pressure at the valve inlet overcomes the spring force holding the pilot valve closed. Opening the pilot valve allows a pressure differential to develop across the main valve piston and opens the main valve. This satisfies the code requirement. The Technical Specification (TS) Surveillance Requirement (SR) 3.4.3.1 requires verification that the safety function lift setpoint of the required S/RVs is 1,145 +/- 34.3 psig. Following testing, lift settings shall be within +/- 1%.

The purpose of the lower setpoint tolerance is to ensure sufficient margin exists between the normal operating pressure of the system and the point at which the S/RVs actuate in the safety mode. The nominal operating pressure of the reactor pressure vessel (RPV), at power, is 1,040 psig. For the low tolerance as-found setpoint of -3 percent, the S/RV would lift at 1,110.7 psig and provide an operating margin of 70.7 pounds per square inch differential (psid) between the nominal reactor operating pressure and the lowest margin lift pressure. This provides sufficient margin to prevent unwanted actuation of the S/RVs postulated to occur during pressurization transients.

Event Description

During the JAF Refuel Outage 25, at 0 percent power in Plant Mode 5, work scope removed 6 S/RVs for replacement from locations B, D, F, G, H, and L and were shipped to testing vendor NWS Technologies for as-found testing.

On September 29, 2022, the test found that B S/RV failed its as-found pressure setpoint. Two additional valves C and J were selected as the expanded testing scope; these two S/RVs were removed and shipped to NWS for testing. On October 1, 2022, the G and D failed as-found testing which resulted in all 11 S/RVs needing to be tested. On October 2, 2022, J failed as-found testing and on October 9, 2022, the A failed.

Five of the eleven three-stage S/RV pilots failed low. As-found failed test results are tabulated below:



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1. FACILITY NAME James A. FitzPatrick Nuclear Power Plant	2. DOCKET NUMBER 05000 – 333	3. LER NUMBER		
		YEAR 2022	SEQUENTIAL NUMBER – 003	REV NO. – 00

Table 1 – As-Found Test Results

In-service Location	Pilot Serial Number	First Test (psig)	Acceptance Range (1110.7 – 1179.3 psig)
02RV-71A	119	1109	Unsat – Low
02RV-71B	90	1094	Unsat – Low
02RV-71D	97	1105	Unsat – Low
02RV-71G	27	1100	Unsat – Low
02RV-71J	21	1099	Unsat – Low

Event Analysis

The TS inoperability of the five (5) S/RVs is a reportable condition in per 10 CFR 50.73(a)(2)(v)(D). The cause of this condition has not been determined at this time. Disassembly and failure analysis will be performed at NWS Technologies in support of this evaluation. A supplemental report will be submitted by April 28, 2023.

Similar Events

A series of LER events ending with LER-2019-003 dated September 20, 2019 (JAFP-19-0091), documents a corrosion bonding issue with 2-stage model S/RV. It resulted in increased setpoint drift during as-found testing. This condition is not applicable to this event due to the 2-stage model no longer being installed.

LER-2017-004-01 dated March 30, 2018 (JAFP-18-0033), reported corrosion bonding on 2-stage S/RV and the as-found results included one 3-stage S/RV (02RV-71C) testing low out of tolerance. The cause of the 3-stage S/RV was that its original calibration was in the lower half of the acceptance range.

FAILED COMPONENT IDENTIFICATION:

Manufacturer:	Target Rock
Manufacturer Model Number:	0867F-001
Manufacturer Code:	T020
Component Code:	RV
FitzPatrick Component ID:	02RV-71A, 02RV-71B, 02RV-71D, 02RV-71G, 02RV-71J

Corrective Actions

Completed Actions

Replaced all 11 S/RV locations prior to refuel outage startup with refurbished and certified components.

Planned Actions

The 5 failed S/RV were sent to NWS Technologies for further investigation.



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Safety Significance

Nuclear safety – There were no actual consequences caused by this condition. This condition does not affect the ASME overpressure transient analysis. The potential consequence of a low out-of-tolerance SRV setpoint is inadvertent S/RV lifting during normal operating pressure or early lifting during postulated accident scenarios. The lowest as-found test “B” of 1094 psig has 54 psig margin to the nominal operating pressure.

References

Issue Reports:

- IR 04525986, “B” SRV test result exceeded TS limit, dated September 30, 2022
- IR 04526277, “D” SRV test result exceeded TS limit, dated October 2, 2022
- IR 04526278, “G” SRV test result exceeded TS limit, dated October 2, 2022
- IR 04526428, “J” SRV test result exceeded TS limit, dated October 3, 2022
- IR 04528295, “A” SRV as found test outside TS limit, dated October 10, 2022
- IR 04527149, Safety Relief Valve As-Found Testing Failure Roll-up, dated October 5, 2022