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JAFP-20-0025
March 31, 2020

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: Licensee Event Report (LER) 2020-001

Enclosed is a Licensee Event Report concerning an automatic scram following a turbine trip on high RPV water level. In accordance with NEI 99-04, the regulatory commitment contained in this correspondence is to restore compliance with the regulations. The specific methods that have been planned to restore and maintained compliance are discussed in the LER. If you have any questions or require additional information, please do not hesitate to contact Richard Sullivan, Regulatory Assurance Manager, at (315) 349-6562.

Sincerely,

Patrick D. Navin
Site Vice President
FitzPatrick Nuclear Power Plant

TCP/RS

Enclosure

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

NRC FORM 366 (04-2018)

U.S. NUCLEAR REGULATORY COMMISSION

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
James A. FitzPatrick Nuclear Power Plant	05000333	1 OF 3

4. Title

Automatic Scram due to Main Turbine Trip on High RPV Water Level

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
									N/A	N/A
01	31	2020	2020	001	00	03	31	2020	Facility Name: N/A	Docket Number: N/A

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (*Check all that apply*)			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
38	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☑ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Richard Sullivan, Regulatory Assurance Manager	315-349-6562

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
B	SJ	CKV	E334JA	Y		NG			Y

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

Abstract (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 31, 2020, an automatic scram occurred as a result of a main turbine trip on high Reactor Pressure Vessel (RPV) water level. The plant was at reduced power in preparation for maintenance activities. When the 'A' Reactor Feed Pump (RFP) was removed from service, the 'A' RFP discharge check valve (34FWS-4A) failed to immediately close resulting in a rapid increase in RPV level. A high RPV level trip signal resulted in the 'B' RFP trip and Main Turbine trip.

This event resulted in the automatic actuation of the Reactor Protection System and containment isolations in multiple systems, reportable per 10 CFR 50.73(a)(2)(iv)(A). When Secondary Containment automatically isolated, a differential pressure excursion momentarily exceeded Technical Specification limits, a condition reportable in accordance with 10 CFR 50.73(a)(2)(v)(C).

The cause of the event was determined to be due to a failure of the A' RFP discharge check valve (34FWS-4A) to close.

There were no actual safety consequences as a result of this event. The 'B' RFP was restored to service and the condensate and feedwater systems remained available for post-scram recovery.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
James A. FitzPatrick Nuclear Power Plant	05000 – 333	2020	– 001	– 00

NARRATIVE

Background

Unit Conditions Prior to the Event

The James A. FitzPatrick Nuclear Power Plant (JAF) was in Mode 1 at approximately 38% rated thermal power to perform planned maintenance. There were no structures, systems, or components out of service that contributed to this event.

Event Description

On January 31, 2020 at approximately 0555 hours, after the operators removed the 'A' Reactor Feed Pump (RFP) from service, the 'A' RFP discharge check valve 34FWS-4A failed to close and 'B' RFP started to short cycle flow back through 'A' RFP. The feedwater control system responded to a lowering reactor water level and increased the 'B' feedwater turbine speed to automatically maintain RPV water level.

When the 34FWS-4A, 'A' RFP Discharge Check Valve rapidly closed, the elevated 'B' RFP flow was redirected to the RPV resulting in a rapid increase in RPV level until the RPV Water Level - High (Level 8) condition was reached. The trip signal resulted in the 'B' RFP trip and Main Turbine trip. The Main Turbine trip signal resulted in the Reactor Protection System (RPS) [JC] actuation and resultant Reactor Scram.

A subsequent low RPV water level resulted in a Group 2 isolation. The initiation of the RPS due to the automatic scram signal at critical power and the general containment Group 2 were reported per 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A) as ENS 54503.

In addition, when Secondary Containment was isolated with Group 2 isolation, the transitory differential pressure change exceeded Technical Specification (TS) Surveillance Requirement (SR) 3.6.4.1.1 of greater than or equal to 0.25 inches of vacuum water gauge to 0.09 inches of vacuum water gauge for approximately 4 seconds. The Secondary Containment DP did not exceed 0 inches of vacuum water gauge. The cause of the DP change during the transition phase is the difference in closure time for the RBV supply and exhaust isolation valves.

Event Analysis

34FWS-4A, 'A' RFP Discharge Check Valve, was removed and inspected. It was identified that several sub-components were found degraded or broken. This deficiency was determined to have originated at some point prior to this event, during normal operation.

Under the current piping design, during a plant startup, makeup water to the RPV is aligned through a low flow line. This flow rate is insufficient to fully open the model DRV-B discharge check valve causing the check valve to "flutter," exercising the internal valve parts. During normal power operations the main block valves are opened allowing sufficient flow.

The high water level trip of the main turbine resulted in the actuation of RPS. A low water level from the scram resulted in containment isolations in multiple systems; an event reportable per 10 CFR 50.73(a)(2)(iv)(A).

In this LER event, the transitory the secondary containment DP change exceeded SR 3.6.4.1.1 of greater than or equal to 0.25 inches of vacuum water gauge for a few seconds. When the SR is not met then TS 3.6.4.1 was not met and Secondary Containment was Inoperable; therefore, this event is also reportable per 10 CFR 50.73(a)(2)(v)(C).

There were no actual safety consequences as a result of this event. The 'B' RFP was restored to service and the condensate and feedwater systems remained available for post-scram recovery.

Cause

The cause for the scram event was the failure of 'A' Feed Pump discharge check valve, 34FWS-4A, resulting in reactor water level perturbation, Main Turbine trip, and automatic reactor scram.

Similar Events

LER: 1993-009-03, Low Reactor Water Level Scram Due to Feedwater Transient, JAFP-96-0072 dated February 22, 1996.

LER: 2015-006-01, Transitory Secondary Containment Differential Pressure Excursions, JAFP-16-0002, dated February 4, 2016.

FAILED COMPONENT IDENTIFICATION:

Manufacturer:	Enertech
Manufacturer Model Number:	DRV-B
NPRDS Manufacturer Code:	E334JA
NPRDS Component Code:	CKV
FitzPatrick Component ID:	34FWS-4A

Corrective Actions

The 'A' Feed Pump discharge check valve, 34FWS-4A, was repaired. Additional corrective actions are documented in the Corrective Action Program.

References

- Issue Report – IR 04314313, James A. FitzPatrick Reactor Scram 1/31/20