



*Energy Harbor Nuclear Corp
Perry Nuclear Power Plant
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Rod L. Penfield
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December 05, 2022
L-22-270

10 CFR 50.72(a)(2)(i)(B)

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

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2022-002, "Steam Bypass Valve Demand Limited on the 'B' Train due to a Degraded Signal in the Max Combined Flow Limit Circuit" There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Glendon Burnham, Manager – Regulatory Compliance, at (440) 280-7538.

Sincerely,

A handwritten signature in black ink, appearing to read "Rod L. Penfield", written over a horizontal line.

Rod L. Penfield

Enclosure:
LER 2022-002

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III Regional Administrator

Enclosure
L-22-270

LER 2022-002



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
<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 Infocollections.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk alt: 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 Perry Nuclear Power Plant	2. Docket Number 05000 00440	3. Page 1 OF 3
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4. Title Steam Bypass Valve Demand Limited on the 'B' Train due to a Degraded Signal in the Max Combined Flow Limit Circuit
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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	07	2022	2022	- 002 -	00	12	06	2022	Facility Name	05000
									Facility Name	Docket Number
										05000

9. Operating Mode 1	10. Power Level 100
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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)	<input type="checkbox"/> 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)	<input type="checkbox"/> 10 CFR Part 21	<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)(1)(i)
<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)	<input type="checkbox"/> 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 here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact Hali Jenkins, Regulatory Compliance	Phone Number (include area code) 440-280-6378
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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
X	J1	CBD	G080	Y					

14. Supplemental Report Expected

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

On October 7, 2022 at 1740, it was identified that the Maximum Combined Flow Limiter In Control light was lit with the Steam Bypass and Pressure Regulating system on the "B" channel. This light being lit indicates that the max combined flow limiter is in control, which limits steam flow to the main turbine and condenser through the control valves and bypass valves. This indication appeared to be an erroneous indication as reactor power and pressure remained stable. The system contains two channels of pressure regulation, an "A" and "B" channel. A failure in either channel could cause the light to illuminate. A troubleshooting team was developed to determine the potential failure modes.

On October 13, 2022 during problem solving for the Maximum Combined Flow Limiter In Control light, the problem solving team determined the "A" channel was operating normally and that the "B" channel would prevent the bypass valves from responding to a pressure perturbation with the steam bypass and regulating system operating on the "B" channel. The control room shifted off the "B" channel to the "A" channel and declared the "B" channel inoperable.

The direct cause of the Maximum Combined Flow Limiter Light was the failure of "B" Flow Demand circuit card based on the indications obtained and observable damage found on the card during replacement. Corrective action was taken to replace the failed card.

The safety significance of this event is considered to be very low. This condition is reportable under 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant's technical specifications. Technical Specification (TS) 3.7.6 requires the main turbine bypass system to be operable with rated power greater than 23.8 percent, when the "B" channel was in control it was determined that the system was not operable. TS 3.7.6 requires that bypass valve operability be restored within 2 hours, otherwise be less than 23.8 percent power within 4 hours. With firm evidence that the issue had existed on October 7 and with the inoperable "B" channel in control until October 13 the required actions of TS 3.7.6 were not taken, and a condition prohibited by TS resulted.

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Perry Nuclear Power Plant	05000-00440	2022	002	00

NARRATIVE

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT DESCRIPTION

On October 7, 2022 at 1740 and with the reactor at mode 1 and 100% rated thermal power, it was identified that the Maximum Combined Flow Limiter In Control (MCFLC) light was lit with the Steam Bypass and Pressure Regulating system [JL] on the "B" channel, this light being lit indicates that the maximum combined flow limiter is in control, which results in a limitation of steam flow to the main turbine [TG] and condenser through the control valves and bypass valves. While observing plant parameters this appeared to be an erroneous indication as reactor power and pressure remained stable. The system contains two channels of pressure regulation, an "A" and "B" channel. A failure in either channel could cause the light to illuminate. A troubleshooting team was developed to determine the potential failure modes.

On October 13, 2022 during problem solving on the MCFLC light, the problem solving team determined the "A" channel was operating normally while the "B" channel contained a degradation in the circuitry resulting in the illumination of the MCFLC light. The data also indicated the MCFLC signal could be limiting the "B" channel, which would prevent the bypass valves from responding to a pressure perturbation while operating on the "B" channel. At that time operations placed the "A" channel in operation and declared the "B" channel inoperable.

During a maintenance outage on October 30, 2022, the "B" flow demand circuit card [CBD] was replaced. Following the card replacement, testing on the "B" channel determined the channel to be in proper working condition.

CAUSE OF EVENT

The direct cause of the failure of the MCFLC Light was the "B" flow demand circuit card based on the voltage readings and observable damage found on the card during replacement. The likely cause of failure of the circuit card is age-related failure of the components as they are plant original parts.

The removed flow demand card had observable charring at several resistors on the circuit card, and it had degraded output voltage. Based on the voltage reading and the observed charred components on the card, the "B" flow demand circuit card is the direct cause of the MCFLC light illuminating.

EVENT ANALYSIS

A Probabilistic Risk Assessment (PRA) bounding evaluation was performed for this event. Fire and other external hazards were qualitatively addressed to be of low risk. The analysis of this event results in delta CDF and delta LERF values that are below the acceptable thresholds of 1.0E-06/yr and 1.0E-07/yr, as discussed in Regulatory Guide 1.174. Sensitivities performed that increased the frequency of a general transient initiating event did not change these conclusions. The risk of this event is therefore considered to be of very low safety significance in accordance with the Regulatory Guidance.

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Perry Nuclear Power Plant	05000-00440	2022	002	00

NARRATIVE

This condition is reportable under 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant's technical specifications. Technical Specification (TS) 3.7.6 requires the main turbine bypass system to be operable with rated power greater than 23.8 percent. When the "B" channel was in control, it was determined that the system was not operable. TS 3.7.6 requires that bypass valve operability be restored within 2 hours, otherwise be less than 23.8 percent power within 4 hours. With firm evidence that the issue had existed on October 7 and with the inoperable "B" channel in control until October 13, the required actions of TS 3.7.6 were not taken, and a condition prohibited by TS resulted.

CORRECTIVE ACTIONS

Corrective actions were taken to replace the "B" Flow Demand circuit card.

The "A" flow demand card is of similar age to the "B" flow demand card and will be replaced. An outage scope change request was created and approved to add the replacement of the "A" Flow demand card into the upcoming refuel outage in 2023.

PREVIOUS SIMILAR EVENTS

None

COMMITMENTS

None