

Timothy C. Peter
Plant Manager – JAF

JAFP-19-0080
August 23, 2019

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: 2019-002, Unanalyzed Condition Due to Unprotected Control
Circuits Running Through Multiple Fire Areas

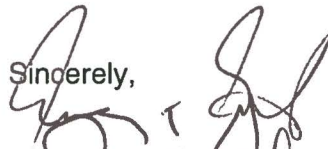
Dear Sir or Madam:

This report is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B).

There are no new regulatory commitments contained in this report.

Questions concerning this report may be addressed to Mr. William Drews, Regulatory
Assurance Manager, at (315) 349-6562.

Sincerely,


GREGORY T. STEFFL By DIRECTION
Timothy C. Peter
Plant Manager

TCP/WD/mh

Enclosure: LER: 2019-002, Unanalyzed Condition Due to Unprotected Control
Circuits Running Through Multiple Fire Areas

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



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/)

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 Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name

James A. FitzPatrick Nuclear Power Plant

2. Docket Number

05000333

3. Page

1 OF 3

4. Title

Unanalyzed Condition Due to Unprotected Control Circuits Running Through Multiple Fire Areas

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
6	24	2019	2019	002	00	08	23	2019	N/A	N/A
									Facility Name	Docket Number
									N/A	N/A
9. Operating Mode			11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)							
1			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. Power Level			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
100			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
					<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER**Licensee Contact**

Mr. William Drews, Regulatory Assurance Manager

Telephone Number (Include Area Code)

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

14. Supplemental Report Expected
☐ Yes (If yes, complete 15. Expected Submission date)
 ☒ No
15. Expected Submission Date

Month	Day	Year

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

During a review of industry Operating Experience, James A. FitzPatrick Nuclear Power Plant (JAF) identified that unprotected control circuits for nonsafety-related oil pumps routed through different fire areas. The concern is that a postulated fire in one area can cause short circuits potentially resulting in secondary fires or cable failures in other fire areas where the cables are routed.

The control circuits for the Turbine Generator Emergency Bearing Lube Oil pump (94P-2), Emergency Seal Oil Pump (94P-13), and Reactor Feed Pump Turbine Emergency Oil Pumps (31P-7A and 31P-7B) are unfused and would not be protected. Cables for these control circuits are routed in safety-related trays with safety-related cables thru fire zones in Battery Charger Rooms, Battery Room Corridor, Cable Spreading Room, Relay Room, and Control Room.

The cause of the condition is the original plant design, prior to 10 CFR 50 Appendix R, did not include overcurrent protection for control circuits in all applicable Safe Shutdown Analysis circumstances. Compensatory actions were established for the affected Fire Zones and corrective actions to evaluated and modify all applicable control circuits are planned.

**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 Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
James A. FitzPatrick Nuclear Power Plant	05000 – 333	2019	– 002	– 00

NARRATIVE**Background**

The James A. FitzPatrick Nuclear Power Plant (JAF) 10 CFR 50 Appendix R Safe Shutdown Analysis is based on the occurrence of a single fire. The only failures that are considered are those directly attributable to the fire, and spurious operations that can be postulated to occur as a result of the fire. No other failures are assumed to occur (i.e., single failure).

Fire areas are established to meet the separation requirements of Section III.G of Appendix R for safe shutdown systems. The 25 fire areas at JAF are further sub-divided into fire zones. The fire zones affected by the condition described in this report are:

- BR-4: Train "B" Battery Charger Room 4
- BR-5: Battery Rooms Corridor
- CS-1: Cable Spreading Room
- RR-1: Relay Room
- CR-1: Main Control Room

However, it is postulated that a fire in one fire area could cause a short-circuit, cause overcurrent, overheat cables, then possibly result in secondary fires in other fire areas where the cables are routed. Fuses were designed in electrical circuits to prevent this type of fire propagation. Secondary fires or cable failures are outside the assumptions of the 10 CFR 50 Appendix R Safe Shutdown Analysis.

Event Description

On June 24, 2019, during a review of industry operating experience, Electrical Engineering identified similar conditions at JAF where nonsafety-related direct current (DC) control circuits lack adequate overcurrent protection. Circuit breakers associated with these control circuits are insufficient to prevent a postulated overcurrent event from damaging additional cables or propagating secondary fire because the circuit breakers are designed to protect the power supply to each pump, not the control circuit portion. Specifically, the control circuit for the Turbine Generator Emergency Bearing Lube Oil (EBOB) pump (94P-2) is unfused. This condition also exists for the Emergency Seal Oil Pump (ESOP) (94P-13) and Reactor Feed Pump Turbine (RFPT) DC Emergency Oil Pumps 31P-7A and 31P-7B.

It was determined that these nonsafety-related control cables are routed in safety-related trays with safety-related cables thru Fire Zones BR-4, BR-5, CS-1, RR-1, and CR-1.

This event was reported to the NRC on June 24, 2019 per 10 CFR 50.72(b)(3)(ii)(B) (ENS 54130). The required actions of the Technical Requirement Manual (TRM) 3.7.M were implemented.

Event Analysis

Based on a review of the cables contained within common enclosures, additional failures resulting from postulated secondary fires or cable failures were evaluated. Where failures invalidate the credited fire safe shutdown success paths, the following fire areas and fire safe shutdown systems were impacted:

Fire Area 03: Automatic Depressurization System (ADS) [EIS identifier: SB], Control Room Ventilation [VI], and High Pressure Coolant Injection System (HPCI) [BJ] are impacted by unprotected control cables for 31P-7A and 94P-13.

**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 Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
James A. FitzPatrick Nuclear Power Plant	05000 – 333	2019	– 002	– 00

Fire Area 1E: Failures similar to those identified in Fire Area 03. A manual review identified that if the circuits for pump 31P-7B were left unprotected, it could also contribute to concerns in certain failure combinations including the control circuits of 31P-7A, 94P-2 and 94P-13.

Other fire areas 04, 06 and 17 will experience additional failures as a result of the unprotected circuits, but the fire safe shutdown methodology remains unaffected in these areas.

Since the degree of separation for redundant safe shutdown trains is lacking, the event would be reportable as an unanalyzed condition that significantly degraded plant safety. Therefore, this report is being submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B), a condition that resulted in the plant being in an unanalyzed condition that significantly degraded plant safety.

Cause

The cause of this condition was overcurrent protection was not installed in all applicable control circuits which can impact the 10 CFR 50 Appendix R Safe Shutdown Analysis. This condition has existed since original plant design.

Similar Events

FitzPatrick, LER: 2013-003-00, Unfused DC Ammeter Circuits Result in Unanalyzed Condition, JAFP-13-0158, dated December 26, 2013.

Corrective Actions**Completed Corrective Actions**

- Established compensatory actions in Fire Areas 03 in accordance with the TRM and initiated Operations Standing order for the condition in Area 1E.

Future Corrective Actions

- Modification to all applicable control circuit cables will be completed to protect the separation of Fire Zones and Areas as required by Appendix R Safe Shutdown Analysis.

Safety Significance

Nuclear safety – There were no actual consequences caused by this condition. The potential consequence of this condition is for a fire damage in one fire area to damage other cables or create a secondary fire in more than one fire area. This may cause a loss of safe shutdown capability outside the analysis of the Safe Shutdown Analysis. However, the risk of fire damage is minimize by fire protection equipment and the availability of Fire Brigade members trained to respond to fire accident scenarios.

Industrial safety – No safety event or abnormal increase to personnel risk results from this condition

Radiological safety – No radiological impact or impact on dose is associated with this condition.

References

- JAF Issue Report – IR 04259118, June 26, 2019
- JAF-RPT-FPS-01975, Revision 5, 10CFR50 Appendix R Safe Shutdown Analysis Report (SSAR)