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March 12, 2014

Docket Nos.: 50-364

NL-14-0309

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

Joseph M. Farley Nuclear Plant – Unit 2
Licensee Event Report 2014-001-00
Inoperable B-Train Solid State Protection System Results in Technical
Specification Required Shutdown

Ladies and Gentlemen:

This Licensee Event Report, "Inoperable B-Train Solid State Protection System Results in Technical Specification Required Shutdown," is being submitted pursuant to the requirements of the Code of Federal Regulations, 10 CFR 50.73(a)(2)(i)(A).

This letter contains no NRC commitments. If you have any questions regarding the submittal, please contact Mr. Bill Arens at (334) 814-4765.

Sincerely,

A handwritten signature in black ink, appearing to read "Cheryl A. Gayheart".

Ms. C. A. Gayheart
Vice President – Farley
CAG/WNA

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cc: Southern Nuclear Operating Company

Mr. S. E. Kuczynski, Chairman, President & CEO

Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer

Mr. B. L. Ivey, Vice President – Regulatory Affairs

Mr. C. R. Pierce, Regulatory Affairs Director

Mr. D. R. Madison, Vice President – Fleet Operations

Mr. J. G. Horn, Regulatory Affairs Manager – Farley

Mr. J. E. Purcell, Nuclear Technical Specialist – Farley

Ms. K. A. Walker, Senior Engineer - Farley

RTYPE: CFA04.054

U. S. Nuclear Regulatory Commission

Mr. V. M. McCree, Regional Administrator

Mr. G.E. Miller, NRR Project Manager - Farley

Mr. P. K. Niebaum, Senior Resident Inspector - Farley

Mr. J. R. Sowa, Resident Inspector - Farley

Mr. R. E. Martin, Senior Project Manager- Farley

Joseph M. Farley Nuclear Plant – Unit 2

NL-14-0309

**Inoperable B-Train Solid State Protection System Results in Technical
Specification Required Shutdown**

Enclosure

Unit 2 Licensee Event Report 2014-001-00

NRC FORM 366 (01-2014)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0104		EXPIRES: 01/31/2017			
LICENSEE EVENT REPORT (LER)									
1. FACILITY NAME Joseph M. Farley Nuclear Plant, Unit 2				2. DOCKET NUMBER 05000 364		3. PAGE 1 OF 3			
4. TITLE Inoperable B-Train Solid State Protection System Results in Technical Specification Required Shutdown									
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	
01	11	2014	2014	- 001 -	00	03	12	2014	
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFRs: (Check all that apply)						
3			<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(vii)						
			<input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A)						
			<input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <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)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A)						
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)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x)						
000			<input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4)						
			<input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5)						
			<input type="checkbox"/> 20.2203(a)(2)(v) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER						
			<input type="checkbox"/> 20.2203(a)(2)(vi) <input type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D)						
Specify in Abstract below or in NRC Form 366A									
12. LICENSEE CONTACT FOR THIS LER									
FACILITY NAME William N. Arens – Licensing Supervisor						TELEPHONE NUMBER (Include Area Code) (334) 814-4765			
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	REPORTABLE TO EPIX	
A	JE	CON	T351	Y					
14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO				
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)									
<p>On January 11, 2014 at 14:53 CST, Farley Nuclear Plant (FNP) Unit 2 completed a shutdown from 100 percent power to Mode 3 to comply with Required Actions of Technical Specifications 3.3.1 (Reactor Trip System Instrumentation) and 3.3.2 (Engineered Safety Feature Actuation System Instrumentation). These Required Actions had been voluntarily entered on January 10, 2014 at 0919 CST in order to perform periodic logic surveillance testing on the B-Train Solid State Protection System (SSPS). FNP was unable to rectify logic testing failures encountered during the testing within the time requirements of the Required Actions, necessitating the shutdown. This shutdown is reportable under 10 CFR 50.73(a)(2)(i)(A). Subsequent troubleshooting identified the direct cause of the logic test failures to be due to foreign material causing an intermittent short between two logic card connector pins. Following removal of the foreign material the SSPS was restored to operable status and Unit 2 was restarted on January 14, 2014. The root cause of this event was determined to be that station leadership did not appropriately manage the risk associated with past indeterminate SSPS failures. Corrective actions include an intensive inspection of both units' SSPS cabinets for foreign material, to revise troubleshooting procedures to include component validation during troubleshooting and to establish a practice of timely issue resolution when the direct cause of a failure was not validated during initial troubleshooting.</p>									

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05000 364

YEAR

SEQUENTIAL
NUMBERREVISION
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OF

3

NARRATIVE

Westinghouse - Pressurized Water Reactor

Energy Industry Identification Codes are identified in the text as [XX].

Description of Event

On January 10, 2014 at 0919 CST, while operating in Mode 1 at 100 percent power, Farley Nuclear Plant (FNP) Unit 2 voluntarily entered 24-hour Required Actions of Technical Specifications 3.3.1 (Reactor Trip System Instrumentation) and 3.3.2 (Engineered Safety Feature Actuation System Instrumentation) in order to perform periodic logic testing of the B-Train Solid State Protection System (SSPS)[CAB] per surveillance procedure FNP-2-STP-33.0B, "Solid State Protection System Train B Operability Test". During this testing, unexpected test results were encountered at two logic test switch [HS] positions, C-22 and D-1. FNP immediately organized an Issue Response Team to coordinate troubleshooting efforts. FNP was unable to resolve the unexpected test results prior to the expiration of the Required Actions, resulting in the shutdown of Unit 2 to Mode 3 on January 11, 2014 at 1453 CST. This shutdown is reportable under 10 CFR 50.73(a)(2)(i)(A), "The completion of any nuclear plant shutdown required by the plant's Technical Specifications". As troubleshooting efforts continued, Unit 2 was cooled down to Mode 5 on January 12 at 2045 CST to further comply with Technical Specification Required Actions.

A subsequent inspection of the connector pins for the Safeguards Driver circuit card at location A516 identified a stray "termi-point clip" electrical connector [CON] making contact with pins 16 and 17. The termi-point clips are utilized in the FNP SSPS system to secure circuitry wiring to circuit board connector pins. A search of accessible portions of the cabinet resulted in the identification of a second stray termi-point clip on pin 43 of the Universal Logic card at location A407. No other foreign material was identified in the cabinet.

Following removal of the two termi-point clips a successful logic test of the B-Train SSPS per procedure FNP-2-STP-33.0B was completed on January 13, 2014 at 1845 CST. The B-Train SSPS was returned to operable status and a plant startup was commenced with Mode 2 being entered on January 14, 2014 at 1003 CST. Unit 2 returned to full power on January 15, 2014 at approximately 2300 CST.

Cause of Event

A root cause investigation determined that the direct cause of the B-Train SSPS logic test failure was foreign material in the form of a stray termi-point clip that caused an intermittent short between pins 16 and 17 of the Safeguards Driver card at location A516. The logic card at location A407 is associated with nuclear instrument intermediate range trip circuitry. Due to a lack of a history of any intermediate range trip logic errors or other issues associated with this location, the stray termi-point clip at this location is not suspected of having caused any electrical shorts. A review of the maintenance history for the B-Train SSPS failed to identify a specific work activity or time period when the foreign material was introduced into the cabinet.

The root cause of this event was determined to be that FNP leadership did not appropriately manage the risk associated with past indeterminate SSPS failures.

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NARRATIVE

Safety Assessment

The intermittent short caused by the stray termi-point clip may have resulted in numerous B-Train component actuations not occurring in the event of an automatic safety injection. However the manual B-Train safety injection actuation capability remained unaffected by the short. Initiation of manual safety injection is an immediate operator action in the emergency response procedures that is directed by procedure and performed by a single action from the main control board. Both automatic and manual reactor trip functions of B-Train SSPS were unaffected by the short.

The redundant A-Train SSPS and A-Train components actuated by SSPS remained operable for the duration of declared inoperability of the B-Train SSPS. Additionally there was no plant event during the inoperability period that called for an SSPS actuation. Unit 2 remained within Technical Specification limits at all times.

Corrective Action

To address the extent of condition from this event, non-intrusive foreign material inspections of the Unit 2 A-Train SSPS cabinet and both trains of Unit 1 SSPS cabinets are being performed at the next opportunity (when each train of SSPS is disabled during scheduled surveillance testing) and more thorough and intrusive foreign material inspections of the SSPS cabinets will be performed during the next refueling outage for each unit.

FNP implemented FME controls for electrical cabinets in 2003 and strengthened these procedures in 2007 with the inclusion of a checklist to document FME breeches and closeout inspections. During the root cause investigation, the FME procedure (NMP-MA-009) and completed FME breach checklists for work in SSPS cabinets were reviewed. This review determined that current FME practices are sufficient to preclude uncontrolled introduction of FME during work activities.

To prevent reoccurrence, troubleshooting procedures will be revised to establish a practice of performing component validation during troubleshooting and to establish a practice to address timely issue resolution when the direct cause of a failure was not validated during initial troubleshooting.

Additional Information

Previous FNP Licensee Event Reports were reviewed from 2008 to present with no reports being identified related to failures of the SSPS of either train on either unit.