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Docket No.: 50-348

NL-16-2480

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

Joseph M. Farley Nuclear Plant – Unit 1  
Licensee Event Report 2016-006-00  
Manual Reactor Trip due to Loss of Speed Control  
on 1A Steam Generator Feed Pump

Ladies and Gentlemen:

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations, 10 CFR 50.73(a)(2)(iv)(A), for a manual actuation of the Reactor Protection System and an automatic start of the Auxiliary Feedwater system.

This letter contains no NRC commitments. If you have any questions, please contact Julie Collier at 334.814.4639.

Respectfully submitted,

Ms. C. A. Gayheart  
Vice President – Farley

CAG/EGA

Enclosure: Unit 1 Licensee Event Report 2016-006-00

U. S. Nuclear Regulatory Commission

NL-16-2480

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cc: Southern Nuclear Operating Company

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

Ms. C. A. Gayheart, Vice President – Farley

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U. S. Nuclear Regulatory Commission

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**Joseph M. Farley Nuclear Plant Unit 1**

**Unit 1 Licensee Event Report 2016-006-00**

**Manual Reactor Trip due to Loss of Speed Control  
on 1A Steam Generator Feed Pump**



**LICENSEE EVENT REPORT (LER)**

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, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet 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.

<b>1. FACILITY NAME</b>		<b>2. DOCKET NUMBER</b>		<b>3. PAGE</b>	
Joseph M. Farley Nuclear Plant, Unit 1		05000	348	1 OF	3

**4. TITLE**  
Manual Reactor Trip due to Loss of Speed Control on 1A Steam Generator Feed Pump

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
11	08	2016	2016	- 006 -	00	12	19	2016		

<b>9. OPERATING MODE</b>  1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>										
	<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 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)							
<b>10. POWER LEVEL</b>  32%	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)							
	<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)							
	<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 <b>Julie Collier, Senior Licensing Engineer</b>	TELEPHONE NUMBER (Include Area Code) <b>334-814-4639</b>
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JK	SC	W120	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>		
	MONTH	DAY	YEAR

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

On November 8, 2016, Joseph M. Farley Nuclear Plant Unit 1 was reducing power to remove the main generator from service. The 1A steam generator feed pump did not respond to control steam generator levels as expected when the miniflow valve was opened per procedure. Steam generator levels lowered due to lower feed flow, and at 1331 the reactor was manually tripped from 32 percent power to prevent reaching the low steam generator level automatic reactor trip setpoint. The motor driven auxiliary feed pumps also started automatically, as expected, with the manual reactor trip. The main steam isolation valves were closed to limit the unit cool down, decay heat removal was accomplished with the atmospheric relief valves, and the unit was maintained in mode 3. The controller failure was caused by the speed reference adjust and speed controller (C2) card being out of tolerance due to a failed A2 operational amplifier on the card, which was caused by infant mortality. The C2 card was replaced, and the new card was verified to be within the required tolerance. This event is reportable per 10 CFR 50.73(a)(2)(iv)(A) due to manual actuation of the reactor protection system and automatic actuation of the auxiliary feedwater system.



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

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1. FACILITY NAME	2. DOCKET NUMBER		3. LER NUMBER		
	YEAR	SEQUENTIAL NUMBER	REV NO		
Joseph M. Farley Nuclear Plant, Unit 1	05000-	348	2016	006	00

**NARRATIVE**

**A. PLANT AND SYSTEM IDENTIFICATION**

Westinghouse - Pressurized Water Reactor

**B. DESCRIPTION OF EVENT**

At 1326, on November 8, 2016, reactor power was at 34 percent in Mode 1 and power was being reduced to remove the main generator from service. The recirculating flow control valve [FCV] for the 1A Steam Generator Feed Pump (SGFP) [P] was opened in accordance with unit shutdown procedure. All steam generator (SG) [SG] levels began to trend down, as expected and as described in the unit operating procedure. The unit operator attempted to raise speed for the 1A SGFP using the SGFP master speed controller [SC]. The SGFP speed rose to approximately 3700 rpm but would not rise further. The demand on the SGFP master speed controller was greater than 65 percent, which corresponded to a speed greater than 3700 rpm. Due to the inadequate response from the SGFP master speed controller, the Shift Supervisor directed raising speed on the 1A SGFP using the slave controller. Demand on the slave controller was raised to approximately 80 percent, which corresponded to a speed higher than 3700 rpm. The 1A SGFP speed was observed to not have changed and remained at 3700 rpm. The Shift Supervisor then established trip criteria. Due to the inability to raise 1A SGFP speed and feedwater flow to the SGs, all SG levels continued to lower. At 32 percent reactor power, the Shift Supervisor directed a manual reactor trip to prevent reaching the low SG level automatic reactor trip setpoint. At 1331, a manual reactor trip was performed due to lowering SG levels and an inability to raise speed and feedwater flow because the 1A SGFP speed control circuitry failed. The motor driven auxiliary feed pumps also started automatically, as expected, with the manual reactor trip. The main steam isolation valves were closed to limit the unit cool down because the isolation valves [ISV] on the 2A/2B moisture separator reheater [MSR] second stage had excessive leakby. Decay heat removal was accomplished with the atmospheric relief valves, and the unit was maintained in mode 3 to continue with the previously scheduled main generator repairs.

**C. UNIT STATUS AT TIME OF EVENT**

Unit 1, Mode 1, 32 percent power with a unit shutdown in progress

**D. CAUSE OF EVENT**

The speed reference adjust and speed controller (C2) card was found to have an out of tolerance output voltage due to an A2 operational amplifier on the card that failed because of infant mortality.

**E. REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT**

This event is reportable as required by 10 CFR 50. 73(a)(2)(iv)(A) due to a manual actuation of the reactor protection system and automatic actuation of the auxiliary feedwater system. The reactor was shut down at 1331 and mode 3 was entered. There was no loss of safety function



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		2016	006	00	

**NARRATIVE**

and no radioactive release associated with this event. All required safety systems were available and responded as expected. There were no actual consequences detrimental to the health and safety of the public and the event is considered to be of very low safety significance.

**F. CORRECTIVE ACTION**

A new C2 card was installed, and the 1A SGFP high pressure and low pressure governor valves were stroked satisfactorily as the functional test.

**G. ADDITIONAL INFORMATION**

- 1) Previous Similar Events: none
- 2) Commitment Information: No commitments are made in this correspondence.