Thomas A. Lynch
Vice President - Farley

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September 24, 2012

Docket Nos.: 50-348

NL-12-1801

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

Joseph M. Farley Nuclear Plant – Unit 1
Licensee Event Report 2012-005-00
Unit Shutdown Required by Technical Specification 3.8.1

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73 (a)(2)(i)(A), Southern Nuclear Operating Company (SNC) hereby submits the enclosed Licensee Event Report 2012-005-00. This letter contains no commitments to the NRC. If you have any questions regarding this submittal, please contact Doug McKinney at (205) 992-5982.

Sincerely,

T. A. Lynch
Vice President – Farley

TAL/WEB

Enclosure: Unit 1 Licensee Event Report 2012-005-00

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. T. A. Lynch, Vice President – Farley
Mr. B. L. Ivey, Vice President – Regulatory Affairs
Mr. B. J. Adams, Vice President – Fleet Operations
RTYPE: CFA04.054

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley
Mr. E. L. Crowe, Senior Resident Inspector – Farley
Mr. M.O. Miller, Senior Project Engineer, NRC Region II

Joseph M. Farley Nuclear Plant – Unit 1

NL-12-1801

Unit Shutdown Required by Technical Specification 3.8.1

Enclosure

Unit 1 Licensee Event Report 2012-005-00

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

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 Section (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.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Joseph M Farley Nuclear Plant-Unit 1	05000 348	1 OF 4

4. TITLE
Unit Shutdown Required by Technical Specification 3.8.1

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
										05000
07	26	2012	2012	- 005 -	00	09	24	2012	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE
1

10. POWER LEVEL
100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☒ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Joseph M Farley Nuclear Plant / B. D. McKinney / Regulatory Response Mgr.	205-992-5982

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
E	EK	DG	F010	Y	E	EK	FCO	R290	Y

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)*

On July 26, 2012, at 2151 hours CDT with Unit 1 operating in Mode 1 at approximately 100 percent rated thermal power, a reactor shutdown was conducted in accordance with Condition H of Limiting Condition for Operation (LCO) 3.8.1 following expiration of the Completion Time allowed for compliance with Condition B.4 of that LCO. The Unit was stabilized in Mode 5 pending necessary repairs to EDG 1B and its return to operability. Previously, on July 16, 2012, LCO 3.8.1 was voluntarily entered and EDG 1B was removed from service for planned 24-month maintenance. Following completion of the maintenance on July 20, 2012, during the post-maintenance operation evaluation run, oscillations occurred in certain EDG parameters including power output. Subsequently, within minutes, EDG 1B unexpectedly shutdown. The initial investigation included an examination of all cylinders which led to the discovery of a damaged piston and cylinder liner on the #12 cylinder. Subsequent investigation determined the immediate cause of the EDG 1B shutdown was a high crankcase pressure trip; the underlying cause of the engine shutdown was the malfunction of the engine's intercooler thermostatic bypass valve (Q1R43V0561) due to the failure of one of three thermal actuating devices. There were no adverse effects on plant safety or on the health and safety of the public as a result of this event.

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73(a)(2)(i)(A) due to the completion of a plant shutdown pursuant to Technical Specifications 3.8.1, "AC Sources – Operating".

B. UNIT STATUS AT TIME OF EVENT

At the time of this event, Unit 1 was in Mode 1 at approximately 100 percent rated thermal power.

C. DESCRIPTION OF EVENT

On July 26, 2012 at 2151 hours CDT, with Unit 1 operating in Mode 1 at approximately 100 percent rated thermal power, the Unit operators commenced a reactor shutdown in accordance with Condition H of Limiting Condition for Operation (LCO) 3.8.1 following expiration of the Completion Time allowed for compliance with Condition B.4 of that LCO. The Unit was subsequently stabilized in Mode 5 pending necessary repairs to EDG 1B and its return to operability.

In accordance with 10 CFR 50.72(b)(2)(i) which specifies the reporting requirement for a Technical Specification required shutdown, a 4-hour non-emergency notification was made on July 26, 2012, at 2224 CDT for Unit 1 (Event Notification 48140).

D. CAUSE OF EVENT

On July 16, 2012, at approximately 2152 CDT, Technical Specification LCO 3.8.1 was voluntarily entered on Plant Farley Unit 1 and EDG 1B was removed from service for the purpose of performing the planned 24-month maintenance activities. Five days into the Required Action Statement (RAS), the maintenance was completed and EDG 1B began a post-maintenance operation evaluation run. Approximately two hours into the evaluation run, soon after reaching a fully loaded condition, oscillations were noted to occur for certain EDG parameters (such as load, output amps and power, scavenging air pressure, and governor position). Subsequently, within a few minutes, EDG 1B unexpectedly shutdown. The initial investigation included an examination of all cylinders which led to the discovery of a damaged piston and cylinder liner on the #12 cylinder. Subsequent investigation determined that the immediate cause of the EDG 1B shutdown was a high crankcase pressure trip; the underlying cause of the engine shutdown was the malfunction of the engine's intercooler thermostatic bypass valve (Q1R43V0561) due to the failure of one of three thermal actuating devices. The malfunction of the thermostatic bypass valve prevented adequate cooling of the intercooler system that in turn led to EDG overheating and cylinder/piston breakdown. The extent of repairs required to return EDG 1B to operability required a period of time that exceeded the Completion Time allowed by Condition H of LCO 3.8.1, and the Unit was shut down and placed in Mode 5 pursuant to the associated Required Action.

The underlying failure of the engine's intercooler thermostatic bypass valve to provide adequate cooling of the EDG's intercooler system (that is, the EDG's water jacket) was concluded to be due to the failure of one of three thermal actuating devices (commonly termed "power pill"). The power pill is a device (a subcomponent of the thermostatic bypass valve) which contains a temperature sensitive wax that expands with increasing temperature and provides the motive force to lift the controlling valve element off of its seat allowing intercooler fluid to flow to remove heat from the supported load. Industry experience with such thermostatic valve elements has shown that a failure mechanism of the power pill may exist which appears to be related to the device's time-in-service (Reference INPO OE 34938).

Contributing causes were determined to be inadequate monitoring of the intercooler inlet and outlet water temperatures during EDG runs and the inadequate preventative maintenance replacement frequency of Robertshaw power pill elements in the subject thermostatic bypass valve.

E. SAFETY ASSESSMENT

The safety significance of this event is considered minimal. Power from EDGs 1-2A and 1C remained available to supply the redundant Train "A" safety-related equipment. Further, offsite power circuits were available and adequate to supply electrical power to the onsite Class 1E distribution system. The plant was stabilized in Mode 5 within the allowed time limits. The Unit remained within Technical Specification limits at all times.

Based upon these considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event.

F. CORRECTIVE ACTION

1. The corrective actions were to:

   - Replace all three power pills in the intercooler thermostatic valve poppet assembly for EDG 1B;
   - Institute more robust monitoring of the cooling system during EDG runs; and
   - Revise preventative maintenance frequency for the Robertshaw power pills.

G. ADDITIONAL INFORMATION

1) Failed Components:

Component 1: Pielstick PC-2 Diesel Generator
Manufacturer 1: Fairbanks Morse Engine Division of Coltec Industries

Component 2: Robertshaw Valve I-1285-F
Manufacturer 2: Robertshaw Industrial Products

Component 3: Valve Power Pill 96995A20
Manufacturer 3: Robertshaw Industrial Products

2) Previous Similar Events:

There have been no failures of the subject power pill at Plant Farley in the previous three years. See Industry experience identified in section H below.

3) Energy Industry Identification System Code:

EDG 1 - EK
Thermostatic Control Valve - FCO

4) Commitment Information:

This report does not create any new permanent licensing commitments.

H. PREVIOUS INDUSTRY OPERATING EXPERIENCE:

1) OE18813 - Failure of Diesel Generator Jacket Water Temperature Control Valve (July 2004)

2) OE34938 - High Emergency Diesel Generator Jacket Water Temperature Due to Failed Temperature Regulator (November 2011)