

J. R. Johnson
Vice President – Farley

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September 15, 2008

Docket Nos.: 50-348

NL-08-1357

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

Joseph M. Farley Nuclear Plant – Unit 1
Licensee Event Report 2008-003-00
Emergency Diesel Generator 1-2A Lube Oil Heat Exchanger Leak

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(i)(A) and 50.73(a)(2)(v)(D), Southern Nuclear Operating Company (SNC) is submitting the enclosed Licensee Event Report.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

A handwritten signature in black ink that reads "J. R. Johnson". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

J. R. Johnson
Vice President – Farley

JRJ/CHM

Enclosure: Unit 1 Licensee Event Report 2008-003-00

U. S. Nuclear Regulatory Commission
NL-08-1357
Page 2

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. J. R. Johnson, Vice President – Farley
Mr. D. H. Jones, Vice President – Engineering
RTYPE: CFA04.054; LC # 14826

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. A. Jervy, NRR Project Manager – Farley
Mr. E. L. Crowe, Senior Resident Inspector – Farley

J. R. Johnson
Vice President – Farley

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Enclosure

Unit 1 Licensee Event Report 2008-003-00

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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollect@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

Joseph M Farley Nuclear Plant – Unit 1

2. DOCKET NUMBER

05000 348

3. PAGE

1 of 5

4. TITLE

Emergency Diesel Generator 1-2A Lube Oil Heat Exchanger Leak

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
07	21	2008	2008	- 003 -	00	09	15	08	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

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

10. POWER LEVEL

100

- | | | | |
|---|---|---|---|
| <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) |
| <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) |
| <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 checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

12. LICENSEE CONTACT FOR THIS LER

NAME

J. R. Johnson – Vice President

TELEPHONE NUMBER (Include Area Code)

334 899-5156

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	LB	HX	A321	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 21, 2008 water was discovered in the Lube Oil [LA] sump and the Lube Oil Heat Exchanger [LB] of Emergency Diesel Generator (EDG) 1-2A [EK] during investigation of a high level alarm in the Rocker Arm Lube Oil Reservoir. The Lube Oil sump level was found to be three inches above the normal level which represents approximately 300 gallons. An additional 65 gallons of water was drained from the Lube Oil Heat Exchanger shell side drains. EDG 1-2A (an A-Train EDG) was declared inoperable on July 21, 2008 at 2058 hours. Unit 1 B-Train EDG had been previously removed from service on July 20, 2008 for a planned exhaust header replacement. The combination of both diesels being out of service required entry into Technical Specification (TS) 3.8.1 Conditions E and F. A technical specification required shutdown from Mode 1 to Mode 3 was commenced at 0541 CST on July 22, 2008 in accordance with TS 3.8.1 Condition F, which required Unit 1 to be placed in Mode 3 prior to 1058 hours. Unit 1 reached Mode 3 at 1046 hours.

Eddy current and pressure testing was performed on the Lube Oil Heat Exchanger with two tubes showing indication of leakage. Four additional tubes were preventatively plugged. The Lube Oil Heat Exchanger was hydrostatically tested with no indication of leakage. The entire diesel lube oil sump contents were drained and the engine cleaned to remove any residual water. EDG 1-2A was returned to service on July 29, 2008 at 2000 hours. EDG 1B was returned to service on July 28, 2008 at 0921 hours.

Until the failed tubes can be removed and the leakage mechanism determined, monitoring of all EDG Lube Oil Sumps and Lube Oil Heat Exchangers has been increased.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Joseph M. Farley Nuclear Plant Unit - 1	05000 348	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 5
		2008	- 003	- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Westinghouse -- Pressurized Water Reactor
Energy Industry Identification Codes are identified in the text as [XX]

Description of Event

On July 21, 2008 water was discovered in the Lube Oil [LA] sump and the Lube Oil Heat Exchanger [LB] of Emergency Diesel Generator (EDG) 1-2A [EK] during investigation of a high level alarm in the Rocker Arm Lube Oil Reservoir. The Lube Oil sump level was found to be three inches above the normal level which represents approximately 300 gallons. An additional 65 gallons of water was drained from the Lube Oil Heat Exchanger shell side drains. EDG 1-2A (an A-Train EDG) was declared inoperable on July 21, 2008 at 2058 hours. Unit 1 B-Train EDG had been previously removed from service on July 20, 2008 for a preventive maintenance replacement of the exhaust headers. The combination of the planned 1B EDG outage and the emergent 1-2A EDG outage required entry into Technical Specification (TS) 3.8.1 Conditions E and F. A technical specification required shutdown from Mode 1 to Mode 3 was commenced at 0541 CST on July 22, 2008 in accordance with TS 3.8.1 Condition F, which required Unit 1 to be placed in Mode 3 prior to 1058 hours. Unit 1 reached Mode 3 at 1046 hours.

Unit 2 was affected by the 1-2A EDG being removed from service. However, there was no loss of safety function on Unit 2 because the B-Train EDG 2B was operable. Unit 2 remained in Mode 1, 100% power under TS 3.8.1 Condition B.

An eight hour non-emergency notification (EN # 44358) was made on July 21, 2008 in accordance with 10 CFR 50.72(b)(3)(v)(D) to report a condition that could have prevented fulfillment of a safety function due to both trains of EDGs being inoperable. A subsequent four hour non-emergency notification (EN # 44359) was made on July 22, 2008 in accordance with 10 CFR 50.72(b)(2)(i) to report the plant shutdown as required by Technical Specifications.

Eddy current and pressure testing was performed on the Lube Oil Heat Exchanger with two tubes showing indication of leakage. Four additional tubes were preventatively plugged. The Lube Oil Heat Exchanger was hydrostatically tested with no indication of leakage. The entire diesel lube oil sump contents were drained and the engine cleaned to remove any residual water. EDG 1-2A was returned to service on July 29, 2008 at 2000 hours. EDG 1B was returned to service on July 28, 2008 at 0921 hours.

LICENSEE EVENT REPORT (LER)
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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Cause of Event

The loss of safety function and required shutdown of Unit 1 was caused by the unexpected leakage of the EDG 1-2A Lube Oil Heat Exchanger tubes in conjunction with EDG 1B being out of service for exhaust header replacement. The EDG 1-2A is a Fairbanks-Morse model PC2 V-12 diesel generator rated at 4,075 kw. The tube side of the heat exchanger is supplied by plant Service Water which is a raw water system coming from the plant Service Water Pond.

Based on SNC and industry experience these tube breaches were not predicted nor expected at this time in the existing tube bundle's life. This tube bundle had been in service for approximately 10 years and the known degradation mechanism of erosion had been adequately addressed via the application of an epoxy coating on the tubesheet and inside the inlet end of each tube. SNC and industry experience had found that with a properly applied protective coating preventing erosion, no other degradation mechanisms were known to exist within this heat exchanger. Regularly scheduled Eddy Current Testing (ECT) inspections were planned to begin within the next 5 years to monitor this heat exchanger's health as the tube bundle aged.

Since the leaking tubes could not be removed from the heat exchange at this time, the actual cause of the tube leakage has not been determined. While the individual tube pressure test identified pressure boundary breaches in two tubes, the exact nature of these breaches could not be determined. During this EDG outage, ECTs were performed on this heat exchanger three different times in an attempt to detect any flaw or defect. No flaws or defects were detected in any of the six tubes plugged.

Inspection on the heat exchanger tube bundle was performed in place using access ports. No source of degradation was identified. A replacement tube bundle was not available in the industry during this event. SNC is ordering replacements tube bundles. Since the required vendor support was not available to remove the damaged tubes for inspection and a replacement tube bundle did not exist in case the bundle was damaged during tube extraction, SNC chose to plug known leaking tubes. In addition SNC preventively plugged tubes and established interim actions to monitor the heat exchangers until the leakage mechanism is determined and appropriate actions developed. The interim actions given in the Corrective Actions section will minimize the likelihood of undetected leakage of water into the lube oil system that would adversely impact diesel generator performance.

LICENSEE EVENT REPORT (LER)
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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Safety Assessment

This event had no adverse effect on the safety and health of the public.

The Farley onsite standby power source is provided from four EDGs (1-2A, 1B, 2B, and 1C). The continuous service rating of 1C EDG is 2,850 kW and 4,075 kW for EDGs 1-2A, 1B, and 2B. EDG 1-2A and 1-C are A-Train and EDGs 1B and 2B are B-Train. Farley also has a fifth diesel generator (2C), rated at 2,850 kW, that serves as a station blackout diesel which can be manually aligned to supply B-Train power to either unit and power Loss of Site Power (LOSP) loads. The diesel generator 2C can provide backup power to the buses supplied by 1B EDG. Procedures are in place and operators are trained on starting the 2C diesel generator for alignment to the B-Train emergency buses.

During the time that EDG 1-2A and 1B were inoperable, EDG 1C and diesel generator 2C were available to supply power to Unit 1. Either diesel generator would have been able to carry the LOSP loads for Unit 1. Unit 2 B-Train EDG 2B was operable and available to support any event on Unit 2. During the time that two EDGs were inoperable on Unit 1 (July 21 to July 29, 2008) no events occurred which challenged the off-site power supplies and EDG 1C and diesel generator 2C were available. Therefore, the safety and health of the public was not adversely affected.

Corrective Action

EDG 1-2A was declared inoperable and Unit 1 was placed in Mode 3. Eddy current and pressure testing was performed on the Lube Oil Heat Exchanger with two tubes showing indication of leakage. Four additional tubes were preventatively plugged. The Lube Oil Heat Exchanger was hydrostatically tested with no indication of leakage. The entire diesel lube oil sump contents were drained and the engine cleaned to remove any residual water. EDG 1-2A was subsequently returned to service.

Until the leaking heat exchanger tubes can be extracted and analyzed to determine the leakage mechanism and appropriate actions developed, the following interim actions are in place:

All diesel generator Lube Oil Sump levels are being checked once every 12 hours.

Diesel Generator Lube Oil Heat Exchangers and Lube Oil Sumps are being checked for water once per 7 days.

Diesel Generator Lube Oil Heat Exchangers shell side will be checked for water prior to any scheduled surveillance run.

Diesel Generator Lube Oil Sumps will be sampled after scheduled surveillance runs.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Additionally the following correctives action are scheduled:

The failed tubes from EDG 1-2A Lube Oil Heat Exchanger will be removed for analysis.
Completion Date: January 30, 2009

Analyze the removed tubes to determine the cause of the leakage mechanism.
Completion Date: March 30, 2009

Results of the tube leakage analysis will be incorporated into the service water heat exchanger maintenance program. Completion date: May 30, 2009

Additional Information

Previous Similar Events

LER 2008-001-00 Unit 1 Emergency Diesel Generator 1B Exhaust Pipe Failure

LER 2008-002-00 Unit 1 TS 3.0.3 Entry Due to Inoperability of Residual Heat Removal System

NRC Correspondence Routing and Information Sheet

NRC Due Date: 09-20-08 Author: H. Mahan Lic Letter No. NL-08-1357	Hatch Farley Vogtle	Applicable to: 10 CFR 50 Docket No. U1-321 <input type="checkbox"/> U2-366 <input type="checkbox"/> U1-348 <input checked="" type="checkbox"/> U2-364 <input type="checkbox"/> LC # 14826 U1-424 <input type="checkbox"/> U2-425 <input type="checkbox"/>	10 CFR 72 No. 72-36 <input type="checkbox"/> 72-42 <input type="checkbox"/> N/A <input type="checkbox"/>
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Subject of Letter: **LER 2008-003-00 for DG 1-2A Exhaust Leak**

Response to: _____

Review / Concurrence

#	Person	Initials/Date	#	Person	Initials/Date
1	Site Mgmt. Concurrence	<i>CHM</i> 09-04-08	4	Other	
2	PRB Concurrence	<i>CHM</i> 09-04-08	4	Other	
3	SRB Sub. Concurrence	NA	4	Other	

Nuclear Licensing / Management Routing

#	Person	Initials/Date	#	Person	Initials/Date
1	Preparer	<i>CHM</i> 09-08-08	8	NL Manager	<i>9-12-08</i>
2	LE – Review	<i>DWD</i> 09-08-08	9	Vice President – Hatch	NA
3	NL AA Spelling/Format		9	Vice President – Farley	<i>JRJ</i> 9-15-08
4	NL Manager – Hatch	NA	9	Vice President – Vogtle	NA
4	NL Manager – Farley		9	Vice President–Engineering	NA
4	NL Manager – Vogtle	NA	9	Vice President – Fleet Ops	NA
5	Safety Analysis (if applicable)	NA	9	Executive Vice President	NA
6	Allegations/Orders - Legal	<i>AFT</i> 09-05-08	10	Final Review – Preparer	<i>9-15-08</i>
7	VP Notification / Draft	<i>CHM</i> 09-08-08	11	NL AA – Date & Distribution	

General Distributions:

- ☐ All extra copies to be issued via email in **PDF/Hyperlink format if possible** (Except for State, issue hard copy)
- ☐ **Allegation** letters to JT Gasser and M Caston in Confidential envelope
- ☐ **All letters to Executive:** JT Gasser. **Corp Licensing:** MJ Ajluni, BD McKinney, RD Baker, NJ Stringfellow.
Site Performance Analysis: WR Bayne, WG Copeland, KA Underwood. WH Sims, Submittals Review – FNP only.
- ☐ **OPC (HNP & VNP only)** – Laurence Bergen, Ken Rosanski and Bob Masse.
- ☐ **All LERs** – Draft LERs to AF Thornhill for review; LERevents@inpo.org as a WORD doc; JW Kale – FNP LERs only.
- ☐ **Special Reports** – JW Kale – FNP only.
- ☐ **Security/EP – Security Coordinator/EP Supervisor/site EP Coordinators as appropriate**
- ☐ **NRN Project Managers:** All TS Changes, RAI Responses and other items that require a response from the NRC.
Farley: Richard A. Jervey (raj@nrc.gov) **Hatch:** Robert E. Martin (rem@nrc.gov)
Vogtle: Richard A. Jervey (raj@nrc.gov)

Other Distributions and comments: (List all distribution NOT shown in General Distributions above)