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UNITED STATES

NUCLEAR REGULATORY COMMISSION

REGION II

245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

June 8, 2011

EA-11-112

Mr. L. Michael Stinson
Vice President - Farley
Southern Nuclear Operating Company, Inc.
7388 North State Highway 95
Columbia, AL 36319

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, NRC INSPECTION REPORT
05000348/2011-012 AND 05000364/2011-012 AND PRELIMINARY WHITE
FINDING

Dear Mr. Stinson:

This letter transmits a finding for the Joseph M. Farley Nuclear Plant, Unit 2, which has preliminarily been determined to be White, i.e., a finding with low to moderate increased safety significance that may require additional NRC inspections. As described in the enclosed inspection report, the finding involves the failure to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings. This resulted in an electrical short on November 10, 2010, that caused a fire on the Unit 1 main control room (MCR) 1A reactor coolant pump (RCP) board handswitch. The finding affected both units due to the common control room. For Unit 1, the risk was preliminarily determined to be of very low safety significance (Green), since that unit was shut down at the time. However, the predominant risk factor for the event was associated with Unit 2 since it was operating at the time. Final disposition of the issue for Unit 1 will be made in conjunction with the final significance determination for Unit 2. NRC Inspection Report Number 05000348, 364/2010005 (ADAMS Accession Number ML110280059), dated January 27, 2011, provides additional details regarding the staff's review of this matter. Subsequent in-office and on-site inspections were completed on May 24, 2011, as documented in the enclosed inspection report. This issue was discussed on June 8, 2011, with Mr. T. Youngblood and other members of your staff.

This finding was assessed based on the best available information, including appropriate assumptions, using the applicable Significance Determination Process (SDP). The NRC took into consideration the testing that your staff performed to recreate the fire conditions when performing the risk assessment. The finding was preliminarily determined to be of low to moderate safety significance (White) for Unit 2. The final resolution of this finding will convey

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the increment in the importance to safety by assigning the corresponding color, i.e., White, a finding with low to moderate increased importance to safety that may require additional NRC inspections. The fire event, caused by the mis-wiring of the 1A RCP oil lift pump pressure switch, was considered to be potentially challenging (i.e. if not suppressed, the fire could have eventually led to a MCR evacuation). The basis for assuming the fire could be potentially challenging was based upon the subjective classification criteria of NUREG-6850, Fire PRA Methodology for Nuclear Power Plants, Appendix C, Section C.2.3.2, Subjective Classification Criteria. Specifically, this was considered to be a fire requiring active intervention to prevent spread. The SDP analysis is included as Enclosure 2. Although the Unit 2 finding has potential safety significance, it does not present an immediate safety concern because you implemented corrective actions that included, but were not limited to, correcting the mis-wiring on the 1A RCP oil lift pump pressure switch and replacing the damaged 1A RCP handswitch on the MCR board.

The finding is also an apparent violation of Technical Specification 5.4.1 as discussed in the enclosed inspection report, and is being considered for escalated enforcement action in accordance with the Enforcement Policy, which can be found on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. In addition, this finding is considered to have a cross-cutting aspect related to the Work Practices component of the Human Performance area in that personnel proceeded with work despite uncertainty and unexpected circumstances [H.4(a)].

In accordance with NRC Inspection Manual Chapter (IMC) 0609, Significance Determination Process, we intend to complete our risk evaluations using the best available information and issue our final determination of safety significance within 90 days of this letter. The SDP encourages an open dialogue between the staff and the licensee; however, the dialogue should not impact the timeliness of the staff's final determination. Before we make a final decision on this matter, we are providing you with an opportunity to (1) attend a Regulatory Conference where you can present to the NRC your perspective on the facts and assumptions the NRC used to arrive at the finding and assess its significance, or (2) submit your position on the finding to the NRC in writing. If you request a Regulatory Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference in an effort to make the conference more efficient and effective. If a Regulatory Conference is held, it will be open for public observation. If you decide to submit only a written response, such submittal should be sent to the NRC within 30 days of your receipt of this letter. If you decline to request a Regulatory Conference or submit a written response, you relinquish your right to appeal the final SDP determination, in that by not doing either, you fail to meet the appeal requirements stated in the Prerequisite and Limitation sections of Attachment 2 of IMC 0609.

Please contact Mr. Scott Shaeffer at (404) 997-4521 within 10 business days from the issue date of this letter to notify the NRC of your intentions. If we have not heard from you within 10 business days, we will continue with our significance determination and enforcement decision. The final resolution of this matter will be conveyed in separate correspondence.

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Since the NRC has not made a final determination in this matter, no Notice of Violation is being issued for this inspection finding at this time. In addition, please be advised that the number and characterization of the apparent violation may change as a result of further NRC review.

Additionally, if you disagree with the cross-cutting aspect assigned to the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Joseph M. Farley Nuclear Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, Enclosure 1, and your response (if you choose to provide one), will be made available electronically for public inspection in the NRC Public Document Room or from ADAMS, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. However, because of the security-related information contained in Enclosure 2, and in accordance with 10 CFR 2.390, a copy of Enclosure 2 will not be available for public inspection. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Richard P. Croteau, Director
Division of Reactor Projects

Docket No.: 50-348, 50-364

License No.: NPF-2, NPF-8

Enclosure(s): 1. NRC Inspection Report 05000348/2011012, 05000364/2011012
2. SDP Phase 3 Summary (**OFFICIAL USE ONLY – SECURITY RELATED INFORMATION**)

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PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE

ADAMS: Yes ACCESSION NUMBER: ML111590912

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:EICS	RII:DRP	
SIGNATURE	SDR /RA/	Via email	Via email	Vai email	Via email	SMS /RA/	
NAME	SRose	ECrowe	JSowa	WRogers	CEvans	SShaeffler	
DATE	06/08/2011	06/08/2011	06/08/2011	06/08/2011	06/08/2011	06/07/2011	
E-MAIL COPY?	YES NO	YES NO					

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRPI\RPB2\FARLEY\REPORTS\2011\IR\2011-012\PUBLIC 2011-012 RCP HANDSWITCH FIRE CHOICE LETTER.DOCX

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(cc w/encl 1 continued)

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SNC

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Letter to L. Michael Stinson from Richard P. Croteau dated June 8, 2011

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, NRC INSPECTION REPORT
05000348/2011-012 AND 05000364/2011-012 AND PRELIMINARY WHITE
FINDING

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-348, 50-364

License No.: NPF-2, NPF-8

Report No.: 05000348/2011-012 AND 05000364/2011-012

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Joseph M. Farley Nuclear Plant, Unit 1

Location: Columbia, AL

Dates: November 10, 2010 - May 24, 2011

Inspectors: W. Rogers, Senior Reactor Analyst (Section 4OA5)
E. Crowe, Senior Resident Inspector (Section 4OA5)
J. Sowa, Resident Inspector (Section 4OA5)

Approved by: Scott M. Shaeffer, Chief
Reactor Projects Branch 2
Division of Reactor Projects

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Enclosure 1

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SUMMARY OF FINDINGS

IR 05000348/2011012. 05000364/2011012; 11/10/2010 - 5/24/2011; Joseph M. Farley Nuclear Plant; Unit 1; Other Activities.

The report transmits the results of the NRC's preliminary assessment of the 1A RCP handswitch fire. One self-revealing finding and Apparent Violation with potentially low to moderate safety significance (White) was identified. The significance of most findings is indicated by their color (great than Green, or Green, White, Yellow, Red); the significance was determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 0310, 'Components Within The Cross-Cutting Areas;' and that findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review.

Cornerstone: Initiating Events

- TBD. A self-revealing finding and apparent violation of Technical Specification 5.4, Procedures, was identified for failing to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings. The licensee incorrectly re-landed electrical wiring following maintenance to the 1A RCP oil lift pump pressure switch. This issue revealed itself upon the discovery of a flame on the 1A RCP handswitch in the Unit 1 main control room (MCR).

The licensee's failure to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings is a performance deficiency. Work was completed, by skill of the craft, without inclusion into an amendment to the existing calibration work order, and resulted in the incoming electrical feeds for the 125 vDC and 130 vAC circuits being cross-connected and causing a fire on the MCR board when the 1A RCP handswitch was taken to start. The finding is more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, a fire occurred in the MCR for Units 1 and 2 as a result of the mis-wiring causing an electrical short in the 1A RCP handswitch. This finding was assessed using the Phase 1 screening worksheets of Appendix 4 and Appendix F of MC 0609, and warranted a review by a regional Senior Risk Analyst because a fire in the MCR had actually occurred. The regional Senior Risk Analysts determined the significance of this finding is preliminarily White. The finding does not represent an immediate safety concern because the wiring has been returned to the original plant design. The finding was assigned a cross-cutting aspect in the Work Practices component of the Human Performance area in that personnel did proceed in the face of uncertainty or unexpected circumstances. [H.4(a)]

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4. OTHER ACTIVITIES

4OA5 Other

Mis-wiring of the 1A RCP oil lift pump pressure switch results in flame on the 1A RCP handswitch.

a. Inspection Scope

The inspectors conducted an in-office review and significance evaluation of the events which led to the 1A RCP handswitch fire.

b. Findings

Introduction A self-revealing finding and apparent violation (AV) of TS 5.4, Procedures, was identified for failing to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings. The licensee incorrectly re-installed electrical wiring following maintenance to the 1A RCP oil lift pump pressure switch. This issue revealed itself upon the discovery of a flame on the 1A RCP handswitch in the Unit 1 MCR board.

Description On November 10, 2010, with Unit 1 shutdown for the refueling outage (RFO), the licensee attempted to start the 1A RCP. The control room operator noticed the amber light for the switch position miss-match indication illuminate, heard an audible noise coming from the 1A RCP handswitch and noticed the presence of smoke coming from the handswitch. The control room operator and control room supervisor investigated the smoke by removing the light array from the handswitch and opening the door to the back of the MCR board panel. Each individual noticed a flame of approximately one inch in height emanating from the handswitch. The fire was extinguished by personnel blowing out the flame, after multiple attempts. The estimated fire duration was approximately one minute.

Leading up to this event, the licensee had recently completed calibration of the 1A RCP oil lift pump pressure switch during the RFO. During the calibration, workers noticed damage to wiring on the oil lift pump pressure switch. The workers involved in the calibration replaced the damage conduit in the containment building and later discussed the replacement of the conduit with their supervisor. Work was completed by skill of the craft without inclusion into the calibration or other work order. The conduit replacement resulted in the removal of the pressure switch's electrical wiring from its 125 vDC and 130 vAC circuits. The licensee's event review determined that during the re-installation of the electrical wiring for the oil pressure switch, the incoming electrical feeds for the 125 vDC and 130 vAC circuits were swapped resulting in the AC and DC circuits being cross-connected creating the path for an electrical short when the associated control room 1A RCP handswitch was taken to the start position.

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The inspectors reviewed licensee work order (WO) 1063205801 which included station procedure FNP-0-IMP-425.3, Pressure Actuated Switches (Generic). The inspectors discovered that FNP-0-IMP-425.3, section 7.4, controls the switch replacement and that step 7.4.3 requires the technician to “make note of lead locations on the pressure switch terminals then disconnect and remove the field leads.” The licensee utilizes skill of the craft to ensure proper landing of electrical leads at the station. The licensee’s planners also include a generic data sheet in work orders that lift and land leads to electrical components. This generic data sheet was not used since it is not formally required, but serves as an aid to the technician. The inspectors also reviewed statements from individuals involved in the lifting and landing of the wires. The individuals indicated that they “wiggled” wires on one end of the conduit as their means to locate that wire at the other end of the conduit. The licensee did not amend the original work order or re-plan the work activity in order to effect repair to the damaged conduit. The licensee entered this event into its corrective action program (CAP) as CR 201011613.

Analysis The licensee’s failure to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings is a performance deficiency. Work was incorrectly completed by skill of the craft without replanning the calibration work order. Conduct of the work directly resulted in the incoming electrical feeds for the 125 vDC and 130 vAC circuits being cross-connected. The finding is more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. An electrical short in the 1A RCP handswitch resulted in a fire occurring in the MCR for Units 1 and 2. The NRC staff determined the fire to be potentially challenging (i.e. if not suppressed, the fire could have eventually lead to a MCR evacuation). The determination that the fire was potentially challenging was based upon the subjective classification criteria of NUREG-6850, Fire PRA Methodology For Nuclear Power Plants, Appendix C, Section C.2.3.2, Subjective Classification Criteria. Specifically, this was considered to be a fire requiring active intervention to prevent spread. This finding was assessed using the Phase 1 screening worksheets of Appendix 4 and Appendix F of MC 0609, and warranted a review by a regional Senior Risk Analyst because a fire in the MCR had actually occurred. The regional Senior Risk Analysts determined the significance of this finding is preliminarily White. The finding does not represent an immediate safety concern because the wiring has been returned to the original plant design. The finding was assigned a cross-cutting aspect in the Work Practices component of the Human Performance area in that personnel did proceed in the face of uncertainty or unexpected circumstances. [H.4(a)]

Enforcement TS 5.4.1 a, states in part that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A states, in part, that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on November 10, 2010, the licensee failed to

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Enclosure 1

properly preplan and perform maintenance that affected safety-related equipment. Specifically, maintenance and repair activities were performed on the 1A RCP oil lift pump pressure switch wiring in the Unit 1 containment using skill of the craft techniques and without an approved amendment to WO 1063205801. During maintenance repair activities for the 125 vDC and 130 vAC circuits on the 1A RCP oil lift pump pressure switch, the proper wiring configuration was not maintained or accomplished in accordance with Drawing D-177249, Elementary Diagram Reactor Coolant Pump Bearing Lift Oil Pumps, Version 2.0. During subsequent activities to return Unit 1 to power operation on November 10, 2010, licensed operators attempted to start the 1A RCP. As a result of the mis-wiring, when the 1A RCP control handswitch was taken to the 'start' position, flame and smoke emanated from the handswitch, from the top and under the MCR board, thereby presenting a challenge to safety-related equipment inside and adjacent to the MCR board. The licensee has returned the wiring to its original plant design and the licensee has entered this issue into their corrective action program as CR 2010116613. URI 05000348/2010005-03, opened in NRC Inspection Report Number 05000348/2010005 and 0500364/2010005 is closed. Pending final significance determination, this finding is identified as AV 05000348,364/2011012-01, Flame Detected on the 1A RCP Handswitch.

40A6 Meetings, Including Exit

On June 8, 2011, the NRC presented the inspection results to Mr. T. Youngblood who acknowledged the findings.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

LIST OF REPORT ITEMS

Opened

05000348, 364/2011012-01 AV Flame Detected on the 1A RCP Handswitch
(Section 4OA5)

Closed

05000348/2010005-03 URI Flame Detected on the 1A RCP Handswitch

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Attachment