



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

August 6, 2018

Dennis R. Madison  
Vice President  
Southern Nuclear Operating Company, Inc.  
Joseph M. Farley Nuclear Plant  
7388 North State Highway 95  
Columbia, AL 36319

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – NUCLEAR REGULATORY  
COMMISSION TEAM INSPECTION REPORT 05000348/2018012 AND  
05000364/2018012**

Dear Mr. Madison:

On June 28, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Joseph M. Farley Nuclear Plant, Units 1 and 2. The NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The inspection examined activities conducted under your license as they relate to the implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders (EA-12-049 and EA-12-051) and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans, your compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and records, observation of activities, and interviews with station personnel.

The NRC inspectors did not identify any finding or violation of more than minor significance. This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

D. Madison

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If you have any questions, please contact me at 404-997-4513.

Sincerely,

*/RA/*

Shane Sandal, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Docket Nos. 50-348, 50-364  
License Nos. NPF-2, NPF-8

Enclosure:  
IR 05000348/2018012, 05000364/2018012

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COMMISSION TEAM INSPECTION REPORT 05000348/2018012 AND  
05000364/2018012 August 6, 2018

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**ADAMS Accession No. ML18218A291**

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DATE	8/3/2018	8/1/2018	8/1/2018	8/2/2018	8/3/2018	8/3/2018

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Numbers: 50-348, 364

License Numbers: NPF-2, NPF-8

Report Numbers: 05000348/2018012; and 05000364/2018012

Enterprise Identifier: I-2018-012-0013

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Joseph M. Farley Nuclear Plant

Location: Columbia, Alabama

Inspection Dates: June 25 - 28, 2018

Inspectors: G. MacDonald, Senior Reactor Analyst (Team Leader)  
B. Bishop, Project Engineer  
K. Miller, Resident Inspector  
K. Roche, Project Manager (NRR/BDBEB)

Approved By: S. Sandal, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Enclosure

## SUMMARY

The NRC continued monitoring licensee's performance by conducting a Temporary Instruction (TI) 2515/191, "Implementation of Mitigation Strategies and Spent Fuel Pool (SFP) Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans," inspection (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18191B074) at Joseph M. Farley Nuclear Plant, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### List of Findings and Violations

No findings or violations of more than minor significance were identified.

### Additional Tracking Items

Type	Issue number	Title	Report Section	Status
TI	TI 2515/191	Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans	Other Activities	Closed

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## INSPECTION SCOPE

Inspections were conducted using the appropriate portions of Temporary Instruction (TI) procedure 2515/191, "Implementation of Mitigation Strategies and Spent Fuel Pool (SFP) Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans," (ADAMS Accession No. ML18191B074). Documents reviewed by inspectors are listed in the documents reviewed section of this report. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

### TI 2515/191 - Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans

Inspectors verified plans for complying with NRC Orders EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12056A045) and EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," (ML12054A679) were in place and were being implemented by the licensee. Additionally, the inspection verified implementation of staffing and communications information provided in response to the March 12, 2012, request for information letter (ML12053A340) and dose assessment information provided per COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned," dated March 27, 2013 (ML12339A262).

- (1) Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the Diverse and Flexible Coping Strategies (FLEX) as described in the plant-specific submittals and the associated safety evaluation (ML17090A457) and determined that the licensee is in compliance with NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ML12056A045). The inspectors verified the licensee satisfactorily:
  - a) developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events;
  - b) integrated their FSGs into their existing plant procedures such that entry into and departure from the FSGs were clear when using existing plant procedures;
  - c) protected FLEX equipment from site-specific hazards;
  - d) developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability;
  - e) trained their staff to ensure personnel proficiency in the mitigation of beyond-design basis events; and

- f) developed the means to ensure the necessary off-site FLEX equipment would be available from off-site locations.
- (2) Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals and the associated safety evaluation (ML17090A457) and determined that the licensee was in compliance with NRC Order EA-12-051, "Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation" (ML12054A679). The inspectors verified that the licensee satisfactorily:
- a) installed the spent fuel pool (SFP) instrumentation sensors, cabling and power supplies to provide physical and electrical separation as described in the plant specific submittals and safety evaluation;
  - b) installed the SFP instrumentation display in the location, environmental conditions and accessibility as described in the plant specific submittals;
  - c) trained their staff to assure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation; and
  - d) developed and issued procedures for maintenance, testing and use of the reliable SFP instrumentation.
- (3) The inspectors reviewed information provided in the licensee's dose submittal and in response to the NRC's March 12, 2012, request for information letter (ML12053A340), and verified that the licensee satisfactorily implemented enhancements pertaining to Near-Term Task Force (NTTF) Recommendation 9.3 response to a large-scale natural emergency event that results in an extended loss of all alternating current (ac) power (ELAP) to all site units and impedes access to the site. The inspectors verified the following:
- a) the licensee satisfactorily implemented required staffing changes to support a ELAP scenario;
  - b) emergency preparedness (EP) communications equipment and facilities are sufficient for dealing with a ELAP scenario; and
  - c) the licensee implemented dose assessment capabilities (including releases from SFPs) using the licensee's site-specific dose assessment software and approach.

The inspectors verified that noncompliances with requirements, and standards identified during the inspection were entered into the licensee's corrective action program as appropriate.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

No proprietary information was retained by the inspectors or documented in this report.

On June 28, 2018, the inspectors presented the inspection results to Mr. D. Erb, Acting Plant Manager, and other members of the licensee's staff.

On July 19, 2018, the lead inspector presented the final inspection results to Mr. G. Surber, Licensing Manager.

## DOCUMENTS REVIEWED

### Condition Reports Initiated as a Result of the Inspection

- 10509209, NRC Identified - Unit 1 PRIMARY SFP LI (N1G31LI0007) Red Light on UPS Illuminated
- 10509496, During NRC Walk-down in FLEX Dome, One Section of Rolled Hose Had Tight Radius Bend
- 10509705, Alternate SFP Level Indicators for FLEX are not Operable
- 10509712, Procedure FNP-1-SOP-36.4A Page 31, Breaker #9 Description Needs to Read N1G31LI0008/ N2G31LI0008
- 10509720, Procedure FNP-1-SOP-36.4A Page 29, Breaker #9, Delete Entire Entry (Does Not Exist)
- 10509764, Procedures for PRIMARY and ALT SFP LI Need Enhancements to Address Abnormal Indications
- 10509896, Fleet Documents for Common SFP LI Not Consistent Across Fleet
- 10510217, NRC Identified – Perform Training Needs Analysis for Functionality Assessment of FLEX Equipment
- 10510402, NRC Identified – Editorial Error in SNC Response to NRC Request for Information
- 10510406, NRC Identified – Evaluate Enhancing FNP-0-AOP-21 to add FLEX Dome Cold Weather Actions

### Procedures

- FNP-0-AOP-21.0, Farley Nuclear Plant Abnormal Operating Procedure Severe Weather, Revision (Rev.) 46.1
- FNP-1-ECP-0.0, Unit 1 Loss of All AC Power, Rev. 30.0
- FNP-2-ECP-0.0, Unit 2 Loss of All AC Power, Rev.30.0
- FNP-1-IMP-222.0, Unit 1 Spent Fuel Pool Level Instrumentation Calibration, Version (Ver.) 1.0
- FNP-2-IMP-222.0, Unit 2 Spent Fuel Pool Level Instrumentation Calibration, Ver. 1.0
- FNP-1-SOP-54.0, Spent Fuel Pit Cooling & Purification System, Ver. 75.1
- FNP-2-SOP-54.0, Spent Fuel Pit Cooling & Purification System, Ver. 75.0
- FNP-1-SOP-36.4A, 120V AC Distribution Systems – AUX BLDG, Rev. 32
- FNP-2-SOP-36.4A, 120V AC Distribution Systems Auxiliary Building, Rev. 34
- NMP-EP-147, Offsite Dose Assessment, Ver. 2.0
- NMP-GM-038, Diverse and Flexible Coping Strategies (FLEX) Program, Ver. 2.0
- NMP-OM-002, Shutdown Risk Management, Ver. 5.0
- NMP-OS-007-001, Conduct of Operations Standards and Expectations, Ver. 16.2
- NMP-OS-019-001, EOF Support for Beyond Design Basis Events, Ver. 3.0
- NMP-OS-019-002, Farley Nuclear Plant TSC Options, Ver. 3.0
- NMP-OS-017, Severe Weather, Ver. 1.1
- NMP-OS-019-013, Unit S, Beyond Design Basis Equipment Unavailability Tracking, Ver. 2.0
- NMP-OS-019-100, Unit S Flex Portable Equipment Operating Instructions, Ver. 1.0
- NMP-OS-019-111, Farley Unit 1 FSG-11, Alternate SFP Makeup and Cooling, Ver. 1.1
- NMP-OS-019-112, Farley Unit 1 FSG-12, Alternate Containment Cooling, Ver. 2.0
- NMP-OS-019-103, Unit 1 FSG-3, Alternate Low Pressure Feedwater, Ver. 1.0
- NMP-OS-019-123, Unit 2 FSG-3, Alternate Low Pressure Feedwater, Ver. 1.0
- NMP-OS-019-104, Unit 1 FSG-4, ELAP DC Load Shed/Management, Ver. 2.0
- NMP-OS-019-124, Unit 2 FSG-4, ELAP DC Load Shed/Management, Ver. 2.0
- NMP-OS-019-105, Unit 1 FSG-5, Initial Assessment and FLEX Equipment Staging, Ver. 1.2
- NMP-OS-019-125, Unit 2 FSG-5, Initial Assessment and FLEX Equipment Staging, Ver. 2.1
- NMP-OS-019-114, Unit 1 FSG-14 Shutdown Modes, Ver. 1.1

NMP-OS-019-134, Unit 2 FSG-14 Shutdown Modes, Ver. 1.1  
NMP-OS-019-159 Unit S SIG-9, Communications, Ver. 1.0  
NMP-OS-019-165, Unit 1 SIG-5, Tank Makeup, Ver. 1.1  
NMP-OS-019-108, Farley Unit 1 FSG-8, Alternate RCS Boration, Ver. 1.1  
NMP-OS-019-161, Farley Unit S SIG-1 600V Alternate Power, Ver. 2.1  
NMP-OS-019-162, Farley Unit S SIG-2 480V Alternate Power, Ver. 1.1  
NMP-OS-019-164, Farley Unit 1 SIG-4, Boron Injection and RCS Makeup, Ver. 2.1  
NMP-OS=019-166, Farley Unit 1 SIG-6, Containment Integrity, Ver. 1.0  
NMP-OS-019-157, Farley Unit S SIG-7, Diesel Fuel Oil Transfer, Ver. 2.1  
NMP-OS-019-131, Farley Unit 2 FSG-11, Alternate SFP Makeup and Cooling, Ver. 1.1  
NMP-OS-019-151, Farley Unit S FSG-11 Background Document, Ver. 1.0  
NMP-OS-019-158, Farley Unit S SIG-8, Spent Fuel Pool Makeup, Ver. 1.1  
NMP-OS-019-163, Farley Unit 1 SIG-3, Core Cooling, Ver. 1.1  
NMP-OS-019-183, Farley Unit 2 SIG-3, Core Cooling, Ver. 2.1  
TRNOPS-TR-417-001, Plant Farley Initial License Training Program Instruction, Ver. 1.0  
TRNOPS-TR-415-001, Plant Farley Systems Operator Training Program Instruction

#### Drawings

A181108, 8.6, Flow Schematic, Ver. 3.0  
A181105, 8.1, Flow Schematic, Ver. 2.0  
A181106, 8.1, Flow Schematic, Ver. 4.0  
A181125, Attachment A, Ver. 1.0  
A181115, Site Plot Plan, Ver. 2.0  
A181115, Partial Plot Plan, Ver. 2.0  
A181106, FLEX Portable System, Spent Fuel Pool Subsystem, Phase 2, Ver. 4.0  
D-177001, Single Line Electrical Auxiliary System Emergency 4160 & 600V Worksheet  
SNC467063E002, Ver. 2.0

#### Work Orders

SNC878108, Unit S Flex Communication Modem Replacement  
SNC894667, FLEX storage Building (Dome) Standby Walk-down, Rev. 0  
SNC913263, Battery is not charging for Unit 2 ALT SFP LI (N2G31LI0008), dated February 8, 2018  
SNC872887, Replace Batteries for Unit 2 ALT SFP LI (N2G31LI0008), dated December 11, 2017  
SNC874015, Replace Batteries for Unit 2 PRIMARY SFP LI (N2G31LI0007), dated August 4, 2017  
SNC824684, Replace Batteries for Unit 2 ALT SFP LI (N2G31LI0008), dated June 9, 2017  
SNC824683, Replace Batteries for Unit 1 ALT SFP LI (N1G31LI0008), dated June 9, 2017  
SNC871306, SG FLEX Pump Functional Test and Inspection  
SNC830921, SG FLEX Pump Operational Inspection  
SNC779173, Boron Injection FLEX Pump Skid Operational Inspection  
SNC871318, 600V FLEX Diesel Generator Functional Test and Inspection  
SNC872281, 600V FLEX Diesel Generator Operational Inspection  
SNC829882, 600V FLEX Diesel Generator Functional Test and Inspection  
SNC829871, SG FLEX Pump Functional Test and Inspection

### Condition Reports

10345426	10263652	10290610	10292439	10296763	10297515
10133337	10345426	10353387	10357521	10509542	10509702
10076939	10076943	10095022	10260819	10263553	10292907
10292440	10292441	10301430	10370275	10370351	10372991
10372995	10374860	10375223	10437010	10439000	10477767
10477769	10496998	10494961	10280106	10424345	10261671
10453055	10281806	10382284	10493500	10373488	10232249
10257129	10244627	10296763			

### Other

A181163, Flex Portable System Steam Generator FLEX Pump Vendor Manual, Ver. 1.0  
A181102, Att. A, Phase 2 480V and 600V Alternating Power Subsystem, Ver. 3.0  
Enercon Project No: SNCF206, Report of Liquefaction Potential Assessment  
RapidCase Functional Test and Inspection Work Instructions  
Flex Training Records for System Operators and Licensed Operators  
RER SNC 546909-02  
NEI 12-01 Farley On-Shift Staffing Analysis, Ver.2.0  
SNC Dose Assessment Form – Plant Farley, June 27, 2018 – 0730  
NEI 12-01, Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities, Rev. 0  
NEI-12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide Rev. 2  
Fukushima Response NEI 12-01 On-Shift Staffing Analysis Phase 2 Report Version 2.0  
Standard Emergency Plan, Ver.2.0  
FHC-S-13-001/X1AR50, Flex Equipment Storage Building, Ver. 2.0  
Southern Nuclear Operating Company Letter (NL-13-0987), Joseph M. Farley Nuclear Plant – Units 1 & 2, Edwin I. Hatch Nuclear Plant – Units 1 & 2, Vogtle Electric Generating Nuclear Plant – Units 1& 2, Capability to Perform Emergency Multi-Unit Offsite Dose Assessments, dated June 24, 2013  
U612262, Spent Fuel Pool Instrumentation System Standard Product Technical Manual, Ver. 1.0  
NMP-TR-212-F08, Training Needs Analysis, F-LT-NL-2014050, dated august 22, 2014  
Adams Accession Number ML15182A175, Letter NL-15-0699, Joseph M. Farley, Unit 1 – Completion of Required Action by NRC Order EA-12-051, Reliable Spent Fuel Pool Level Instrumentation, dated June 26, 2015  
Adams Accession Number ML14239A328, Letter NL-14-1109, Joseph M. Farley, Units 1 and 2 – Third Six-Month Status Report of the Implementation of the Requirements of the Commission Order with Regard to Reliable Spent Fuel Pool Level Instrumentation (EA-12-051), dated August 26, 2014  
RER SNC56909, RER for FLEX Storage Building Site Evaluation and Documentation, Ver. 1.1  
SNC Standard Emergency Plan Annex for FNP Units 1 and 2, Ver. 1.0  
Diesel Fuel Supply Assurance Letter, dated June 27, 2018  
SAFER Response Plan for Joseph M. Farley Generating Station, Rev. 1  
Documentation of Engineering Judgement, DOEJ-FDSNC467063-E001, Voltage Drop Cable Sizing, and Train Separation Evaluation for Flex Power Cables for 600V Buses 1D, 1E, 2D, and 2E, Ver. 3.0  
A-181103, Flex Portable System Phase 3 4160V Alternate Power System, Ver. 2.0  
Calculation SM-SNC458207-006, Auxiliary Building El. 100' Corridor Heat up Evaluation during an Extended Loss of all AC Power ELAP, Ver. 1.0

Joseph M. Farley, Units 1 and 2, Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051 (CAC Nos. MF0716, MF0717, MF1429 and MF1430), dated April 24, 2017  
Final Integrated Plan, U. S. Nuclear Regulatory Commission Order EA-12-049, Strategies for Beyond Design Basis External Events, November 2016  
Farley Nuclear Plant Flex Validation Report, dated April 27, 2016  
Plant Farley FLEX Overview NRC TI-191 Inspection, dated June 25, 2018  
SNCF166-PR-002, Diverse and Flexible Coping Strategies (FLEX) in Response to NRC Order EA-12-049 Mitigating Strategies for Beyond-Design –Bases External Events, Rev. 3  
Fukushima Response, NEI-12-01, On-Shift Staffing Analysis Phase 2 Report, Ver. 2.0