



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 5, 2020

Ms. Cheryl A. Gayheart
Regulatory Affairs Director
Southern Nuclear Operating Co., Inc.
3535 Colonnade Parkway
Birmingham, AL 35243

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – INTEGRATED INSPECTION
REPORT 05000348/2020001 AND 05000364/2020001 AND INDEPENDENT
SPENT FUEL STORAGE INSTALLATION REPORT 07200042/2020001**

Dear Ms. Gayheart:

On March 31, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Joseph M. Farley Nuclear Plant. On April 21, 2020, the NRC inspectors discussed the results of this inspection with Mr. Delson Erb and other members of your staff. The results of this inspection are documented in the enclosed report.

One Severity Level IV violation without an associated finding is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

No NRC-identified or self-revealing findings were identified during this inspection.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at Joseph M. Farley Nuclear Plant.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Alan J. Blamey, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Docket Nos. 05000348 and 05000364 and 07200042
License Nos. NPF-2 and NPF-8

Enclosure:
As stated

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SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – INTEGRATED INSPECTION
 REPORT 05000348/2020001 AND 05000364/2020001 AND INDEPENDENT
 SPENT FUEL STORAGE INSTALLATION REPORT 07200042/2020001 Dated
 May 5, 2020

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DATE	4/30/2020	4/29/2020	5/05//2020	4/30/2020	4/29/2020

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

Docket Numbers: 05000348 and 05000364 and 07200042

License Numbers: NPF-2 and NPF-8

Report Numbers: 05000348/2020001 and 05000364/2020001 and 07200042/2020001

Enterprise Identifier: I-2020-001-0061 and I-2020-001-0086

Licensee: Southern Nuclear Operating Co., Inc.

Facility: Joseph M. Farley Nuclear Plant

Location: Columbia, AL

Inspection Dates: January 01, 2020 to March 31, 2020

Inspectors: P. Meier, Senior Resident Inspector
K. Miller, Resident Inspector

Approved By: Alan J. Blamey, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Joseph M. Farley Nuclear Plant, 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

Pressurizer Safety Valve Lift Pressure Outside of Technical Specifications Limits due to Setpoint Drift			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Not Applicable	NCV 05000348/2020001-01 Closed	Not Applicable	71153
A self-revealed Severity Level (SL) IV NCV of Technical Specifications (T.S.) 3.4.10, “Pressurizer Safety Valves,” was identified when a routine lift pressure test revealed that the 'A' pressurizer safety valve (Q1B13V0031A) as-found set pressure was lower than allowed by T.S. Surveillance Requirement 3.4.10.1 for a duration that exceeded the condition’s T.S. required action completion time.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER (Licensee Event Report)	05000348/2019-001-00	LER 2019-001-00 Pressurizer Safety Valve Lift Pressure Outside of Technical Specifications Limits due to Setpoint Drift	71153	Closed

PLANT STATUS

Unit 1 began the report period at approximately 100 percent rated thermal power (RTP) and remained at or near 100 percent RTP through the end of the report period.

Unit 2 began the report period at approximately 100 percent RTP and remained at or near 100 percent RTP through the end of the report period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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.

REACTOR SAFETY

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 1 'A' containment spray system while the 'B' train was inoperable for testing on January 2, 2020 (FNP-1-SOP-9.0A).
- (2) #1 diesel driven fire pump and the motor driven fire pump alignment during maintenance on the #2 diesel driven fire pump on January 15, 2020 (drawing D170366).
- (3) Unit 2 'B' train high head safety injection system with the 'A' train high head safety injection out of service for planned maintenance on March 9, 2020 (FNP-2-SOP-8.1A).
- (4) Unit 2 turbine driven auxiliary feedwater pump and 'B' motor driven auxiliary feedwater pump during a planned 'A' motor driven auxiliary feedwater pump maintenance outage on March 16, 2020 (FNP-2-SOP-22.0A).

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Fire zone 202 (unit 1 communication room) in March 2020.
- (2) Fire zone 235 (unit 1 switchgear / control rod drive mechanism room) in March 2020.
- (3) Fire zone 2202 (unit 2 communication room) in March 2020.
- (4) Fire zone 2235 (unit 2 switchgear / control rod drive mechanism room) in March 2020.

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Unit 1 auxiliary building, 100-foot elevation, in the auxiliary feed water pump area on February 20 - 27, 2020 (calculation BM-99-1932-001).

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during unit 1 solid state protection system and reactor trip breaker testing on March 6, 2020. On March 30, 2020, observed the unit 1 conduct of operations involving alarm response, reactivity control, and transfer of diesel fuel between emergency diesel generator fuel oil storage tanks. On March 31, 2020, observed performance of a turbine driven auxiliary feedwater pump surveillance and reactivity control.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated license operator continuing training simulator scenario 20-2, as left on February 26, 2020. The scenario involved a faulted and ruptured steam generator.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) Unit 1 'C' charging pump welding repairs from January 7-15, 2020 (SNC1069334; SNC1070049).

- (2) Unit 2 'A' component cooling water pump bearing issue discovered on February 13, 2020 (Condition Report (CR) 10687227).

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed;

- (1) Unit 1 'C' charging pump out of service for unplanned maintenance on January 7-10, 2020 (SNC1069334).
- (2) Unit 1 '1D' 600-volt load center outage affecting the operability of the 1-2A emergency diesel generator for unit 1 on January 22, 2020 (Work Order (WO) SNC632876).
- (3) Unit 2 'B' containment spray cooler outage and planned risk informed completion time contingency from March 2 - 5, 2020 (WO SNC1028105).
- (4) Unit 1 'A' motor driven auxiliary feedwater pump testing, 1-2A emergency diesel generator 24-hour surveillance, 1F 600 volts motor control center maintenance outage affecting control ventilation / filtration, and utility pole work potentially affecting the 12kv supply to the circulating water fans on March 12, 2020 (W/O SNC1078077 & SNC959868).

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Unit 1 'C' charging pump balancing line leak identified on January 7, 2020 (CR 10676102).
- (2) Unit 2 turbine driven auxiliary feedwater pump to the unit 2 'B' steam generator supply valve (2N23HV3228B) slow stroke time identified on December 31, 2019 (CR 10674598).
- (3) Unit 1 hot leg thermal stratification resistance temperature detector issue identified on January 27, 2020 (CR10681581).
- (4) Unit 1 turbine driven auxiliary feedwater pump steam supply drain pot not automatically blowing down identified on February 23, 2020 (CR 10689705).
- (5) Transformer supply to the Unit 1 '1S' 600-volt motor control center thermal issue (affecting the 1-2A emergency diesel generator operability) identified on March 9, 2020 (CR10694270).

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Start-up transformer sudden pressure relay modification to remove the trip function (design change package SNC1065251).

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (7 Samples)

The inspectors evaluated the following post maintenance test activities to verify system operability and functionality:

- (1) Unit 1 'C' charging pump balancing line leak repair on January 7-10, 2020 (CR 10676102; WO SNC1069334).
- (2) #2 diesel driven fire pump 18 month scheduled maintenance during the week of January 14, 2020 (WO SNC983818).
- (3) Troubleshooting and repair of the unit 2 1-2A emergency diesel generator output breaker control room indicating lights on January 22 - 23, 2020 (WO SNC1043454).
- (4) Removal and replacement of a unit 1 containment tendon (H-13BC) field end anchor head on January 29 - 30, 2020 (WO SNC1020168).
- (5) Unit 2 'A' component cooling water pump bearing replacement from February 14 - 17, 2020 (CR 10687227; WO SNC1075744).
- (6) Control room a/c system maintenance outage from March 2 - 4, 2020 (WO SNC889323).
- (7) Unit 2 turbine driven auxiliary feedwater pump remote shutdown panel switch replacement on March 10-12, 2020 (SNC1083141).

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

- (1) Unit 2 'B' train reactor trip breaker and solid state protection system testing on January 7, 2020 (FNP-2-STP-33.0B, FNP-2-STP-33.2B).
- (2) Unit 1 'B' charging pump surveillance test on January 27, 2020 (FNP-1-STP-4.2).
- (3) Unit 1 'B' emergency diesel generator load rejection test and 24 hour loaded run surveillance on January 29, 2020 (FNP-1-STP-80.8).
- (4) Unit 1 containment purge exhaust containment piping penetration local leak rate test on February 7, 2020 (SNC1036119).

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Unit 1 turbine driven auxiliary feedwater pump quarterly inservice testing on January 8, 2020 (FNP-2-STP-22.16).

FLEX Testing (IP Section 03.02) (1 Sample)

- (1) FLEX preventive maintenance testing for diesel generators and diesel driven pumps performed on February 4, 2020 (WO SNC988106; WO SNC988424).

71114.06 - Drill Evaluation

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) Observed a crew in the control room simulator respond to an event for training purposes where an emergency declaration and notification was required due to a steam generator tube rupture and represented a drill and exercise performance opportunity on February 26, 2020.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 1 (January 1, 2019 - December 31, 2019).
- (2) Unit 2 (January 1, 2019 - December 31, 2019).

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

- (1) Unit 1 (January 1, 2019 - December 31, 2019).
- (2) Unit 2 (January 1, 2019 - December 31, 2019).

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

- (1) Unit 1 (January 1, 2019 - December 31, 2019).
- (2) Unit 2 (January 1, 2019 - December 31, 2019).

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in fire detection issues (CR 10683777; CR 10629791) that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) Resolution of equipment issues tracked on the operable but degraded / non-conforming list from February 18, 2020 (NMP-AD-012).

71153 - Followup of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000348/2019-001-00, Pressurizer Safety Valve Lift Pressure Outside of Technical Specifications Limits due to Setpoint Drift (ADAMS Accession No. ML19343B093). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants

Operation of an Independent Spent Fuel Storage Installation at Operating Plants (1 Sample)

- (1) The inspectors evaluated the licensee’s independent spent fuel storage installation cask loadings on March 9 - 27, 2020. Specifically, the inspectors observed the following activities;
 - Fuel selection and fuel loading
 - Heavy load movement of transfer cask
 - Drying and backfill evolutions
 - Transfer and transport evolutions
 - Radiological field surveys.

INSPECTION RESULTS

Observation: Main Control Room Fire Alarms	71152
<p>The inspectors reviewed the licensee’s corrective action program for trends that might be indicative of a more significant safety issue. The inspectors focused their review on unit 1 and unit 2 main control board fire alarm windows where it remained continuously lit or in re-flash due to apparent nuisance alarms or issues that would not reset. Many of these were associated with fire detection and suppression systems in risk significant areas of the plant that require the dispatch of an operator to a fire alarm panel to identify the fire zone causing the alarm. The inspector’s review nominally considered the 6-month period beginning in July 2019 through January 2020, although some examples extended beyond those dates when the scope of the trend warranted. The inspectors compared their results with the licensee’s analysis of trends. Additionally, the inspectors reviewed the adequacy of corrective actions associated with a sample of the issues identified in the licensee’s trend reports. The inspectors also reviewed corrective action documents that were processed by the licensee to identify potential adverse trends in the condition of fire protection structures, systems, and / or components as evidenced by acceptance of long-standing non-conforming or degraded conditions. The inspectors determined that the licensee was following approved administrative controls for the alarms and implementing long-term corrective action plans to</p>	

resolve the causes. The inspectors will continue to assess implementation of the licensee's action plan and verify that their actions trend in a positive direction.

Pressurizer Safety Valve Lift Pressure Outside of Technical Specifications Limits due to Setpoint Drift

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000348/2020001-01 Closed	Not Applicable	71153

A self-revealed Severity Level (SL) IV NCV of Technical Specifications (T.S.) 3.4.10, "Pressurizer Safety Valves," was identified when a routine lift pressure test revealed that the 'A' pressurizer safety valve (Q1B13V0031A) as-found set pressure was lower than allowed by T.S. Surveillance Requirement 3.4.10.1 for a duration that exceeded the condition's T.S. required action completion time.

Description: During the Farley Nuclear Plant unit 1 October 2019 refueling outage, pressurizer safety valve Q1B13V0031A was removed from service and sent to an off-site testing facility. On October 11, 2019, the site was notified that during testing on October 10, 2019 the as-found set pressure was at 2444 psig, which was low outside the plant T.S. allowable lift pressure setting range of 2460 psig to 2510 psig. The valve had been installed and placed in service at Farley Nuclear Plant unit 1 during the 2016 fall outage and remained in service during three complete 18-month fuel cycles. Pressurizer safety valve Q1B13V0031A from Unit 1 was replaced with a similar operable refurbished valve during the October 2019 refueling outage. Licensee Event Report (LER) 05000348/2019-001-00, "Pressurizer Safety Valve Lift Pressure Outside of Technical Specification Limits due to Setpoint Drift," was submitted by the licensee for this event.

Corrective Actions: The valve was replaced with a similar operable refurbished valve during the refueling outage prior to plant startup.

Corrective Action References: CR 10654744

Performance Assessment: The NRC determined this violation was not reasonably foreseeable and preventable by the licensee and therefore is not a performance deficiency. Specifically, random setpoint drift is a recognized valid phenomenon that can occur despite routine testing and maintenance.

Enforcement:

Severity: Traditional Enforcement is being used to disposition this violation with no associated Reactor Oversight Process performance deficiency per section 3.10 of the Enforcement Manual. The inspector assessed the severity of the violation using Section 6.1 of the Enforcement Policy and determined the significance is appropriately characterized as Severity Level IV, due to the inappreciable potential safety consequences. The licensee determined that the safety valve low as-found lift set-point did not have an adverse impact on reactor coolant system over-pressurization protection, since the valve continued to perform its reactor coolant system over-pressure protection function to prevent the system from exceeding the design pressure of 2485 psig. Therefore, the plant remained bounded by the accident analysis in the Final Safety Analysis Report, based on the as-found condition.

Violation: Farley Nuclear Plant unit 1 T.S. LCO 3.4.10, "Pressurizer Safety Valves," requires three operable pressurizer safety valves with lift settings between 2460 psig and 2510 psig, while the Unit is in modes 1, 2, and 3. With one pressurizer safety valve inoperable, Action Statement, Condition "A." Required Action "A.1," requires restoration of the valve to operable status within 15 minutes. If the required action and associated completion time is not met, Action Statement, Condition "B," requires that the unit be in mode 3 within 6 hours. Contrary to the above, the licensee determined the pressurizer safety valve setting was outside the T.S. limits longer than 6 hours and 15 minutes during the last three operating cycles, between November 2016 and October 1, 2019, while the Unit was in modes 1 and 2.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

On April 21, 2020, the inspectors presented the integrated inspection results to Mr. Delson Erb and other members of the licensee staff.