



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

July 30, 2021

EA-21-054

Ms. Cheryl Gayheart  
Regulatory Affairs Director  
Southern Nuclear Company  
3535 Colonade Parkway  
Birmingham, AL 35243

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – INTEGRATED INSPECTION  
REPORT 05000348/2021002 AND 05000364/2021002 AND EXERCISE OF  
ENFORCEMENT DISCRETION**

Dear Ms. Gayheart:

On June 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Joseph M. Farley Nuclear Plant. On July 22, 2021, the NRC inspectors discussed the results of this inspection with Charles Kharrl and other members of your staff. The results of this inspection are documented in the enclosed report.

Three findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. One Severity Level IV violation without an associated finding is documented in this report. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations 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.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; 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  
License Nos. NPF-2 and NPF-8

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV®

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – INTEGRATED INSPECTION  
 REPORT 05000348/2021002 AND 05000364/2021002 AND EXERCISE OF  
 ENFORCEMENT DISCRETION – DATED July 30, 2021

**DISTRIBUTION:**

M. Kowal, RII  
 S. Price, RII  
 L. Gibson, RII  
 RidsNrrPMFarley Resource  
 RidsNrrDro Resource  
 PUBLIC

ADAMS ACCESSION NUMBER: **ML21211A513**

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RII/DRP	RII/DRP	RII/DRP	RII/DRP	
NAME	P. Meier	S. Temple	N. Staples	A. Blamey	
DATE	07/28/2021	07/28/2021	07/29/2021	07/30/2021	

OFFICIAL RECORD COPY

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

Docket Numbers: 05000348 and 05000364

License Numbers: NPF-2 and NPF-8

Report Numbers: 05000348/2021002 and 05000364/2021002

Enterprise Identifier: I-2021-002-0014

Licensee: Southern Nuclear Company

Facility: Joseph M. Farley Nuclear Plant

Location: Columbia, AL

Inspection Dates: April 1, 2021 to June 30, 2021

Inspectors: B. Kellner, Senior Health Physicist  
P. Meier, Senior Resident Inspector  
A. Nielsen, Senior Health Physicist  
W. Pursley, Health Physicist  
J. Rivera, Health Physicist  
S. Temple, 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

Halon System Damper Failure			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000364/2021002-01 Open/Closed	[H.3] - Change Management	71111.12
<p>The inspectors identified a Green NCV for failure to properly implement Operating License Condition for Fire Protection Conditions 2.C.(4) and 2.C.(6) for Units 1 &amp; 2 respectively and 10 CFR 50.48(c). Specifically, the licensee failed to scope fire dampers associated with functionality of the halon systems in the unit 1 and unit 2 control rod drive motor (CRDM) control system cabinet rooms and communication rooms into the monitoring program as required by Section 2.6 of NFPA 805, 2001 edition.</p>			

1J 4Kv Bus Inadvertent Deenergization			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000348, 05000364/2021002-02 Open/Closed	[H.12] - Avoid Complacency	71111.13
<p>A self-revealed Green finding was identified when the licensee failed to properly implement NMP-GM-006, "Work Management," and NMP-AP-003, "Procedure and Work Instruction Use Adherence," which resulted in the unavailability of the station blackout diesel generator (SBO DG) and the electric fire pump.</p>			

Exciter Testing Results in Unit 1 Reactor Trip			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000348/2021002-03 Open/Closed	[H.2] - Field Presence	71153
<p>A self-revealed Green finding and associated non-cited violation (NCV) of 10 CFR 50.65 (a)(4) was identified when the licensee failed to assess the risk associated with the main generator exciter testing leading to a reactor trip. Specifically, the licensee failed to recognize the risk of a reactor trip introduced by the data gathering and testing activities associated with the main generator exciter.</p>			

Main Steam 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 05000364/2021002-04 Open/Closed	Not Applicable	71153
A self-revealed SL IV NCV of Technical Specifications (T.S.) 3.7.1, "Main Steam Safety Valves," was identified when a routine lift pressure test revealed that the C main steam line D safety valve (Q2N11V0012D) was lower than allowed by T.S.			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
EDG	EA-21-054	Failure to Comply with 10 CFR 37 for the Protection of Disused Steam Generators Stored in a Concrete Storage Module	71124.08	Closed
Licensee Event Report (LER)	05000348/2021-001-00	LER 2021-001-00 for Joseph M. Farley Nuclear Plant, Unit 1, Automatic Reactor Trip due to Turbine Generator Trip	71153	Closed
LER	05000364/2020-001-00	LER 2020-001-00 for Joseph M. Farley Nuclear Plant, Unit 2, Main Steam Safety Valve Lift Pressure Outside of T.S. Limits Due to Setpoint Drift	71153	Closed
LER	05000364/2020-001-01	LER 2020-001-01 for Joseph M. Farley Nuclear Plant, Unit 2, Main Steam Safety Valve Lift Pressure Outside of T.S. Limits due to Setpoint Drift	71153	Closed

## **PLANT STATUS**

Unit 1 began the report period defueled as part of a refueling outage. Following the refueling outage, on April 17, 2021, unit 1 reactor was taken critical and entered mode 1 on April 18, 2021. Over a period of approximately four days, rated thermal power (RTP) was increased with various hold points for testing of the recently implemented measurement uncertainty recapture (MUR) modification. On April 22, 2021, an unplanned reactor trip at 48 percent RTP occurred. On April 23, 2021, the reactor was restarted, and entered mode 1. Over approximately 13 days, RTP was increased with various hold points for testing related to the MUR modification until May 6, 2021, when unit 1 achieved 100 percent RTP. Unit 1 was maintained at approximately 100 percent RTP until June 11, 2021. On June 11, 2021, power was reduced to approximately 80 percent RTP due to a circulating water pump issue. From June 11 to June 12, 2021 power was eventually reduced to 68 percent power to maintain main turbine condenser vacuum. On June 13, 2021, unit 1 began a power increase to 100 percent RTP, which was achieved on June 15, 2021, and held there 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 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk-significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

## **REACTOR SAFETY**

### 71111.01 - Adverse Weather Protection

#### Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of summer and high temperatures for the following systems (NMP-GM-025):
  - Low voltage switchyard and transformers on May 26, 2021
  - Service water pond (ultimate heat sink) and river intake on May 26, 2021
  - Plant safety related HVAC systems on May 26, 2021

#### Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe thunderstorms on May 4 and 5, 2021 (FNP-0-AOP-21.0).

#### 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 turbine driven auxiliary feedwater system on April 27, 2021 (FNP-1-SOP-22.0; D175007; D175033)
- (2) Fire pumps following the fire pump outage on May 7, 2021 (D170366)
- (3) Unit 1 'B' train high head safety injection system during 'A' train high head safety injection pump room cooler outage on June 7, 2021 (D175039)
- (4) Unit 1 'C' service water pump alignment to the 'A' train when the 'B' service water pump (normal 'A' train pump) was unavailable for planned maintenance on June 16, 2021 (D170119)

#### 71111.05 - Fire Protection

##### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 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 area 1-040 (unit 1 cable spreading room) on June 22, 2021 (FNP-1-FPP-1.0)
- (2) Fire area 2-040 (unit 2 cable spreading room) on June 22, 2021 (FNP-2-FPP-1.0)
- (3) Fire area 2-018 (unit 2 'A' train auxiliary building DC switchgear room) on June 22, 2021 (FNP-2-FPP-1.0)
- (4) Fire area 1-004 (unit 1 auxiliary building 100' elevation; fire zones 164 and 154) on June 22, 2021 (FNP-1-FPP-1.0)
- (5) Fire area 2-031 (unit 2 auxiliary building cable chase rooms 2250) on June 28, 2021 (FNP-2-FPP-1.0)

#### 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 for the following dates and activities (NMP-OS-007):
  - April 7, 2021 - unit 1 preparations and entry into mode 6 before reloading fuel into the reactor vessel
  - April 13, 2021 - unit 1 preparations and entry into mode 4 following a refueling outage

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

- (1) The inspectors observed and evaluated an operator training simulator exam (Scenario 21-3 Evaluation) on June 21, 2021 that involved a rapid down power, reactor trip, and large break loss of coolant accident.

#### 71111.12 - Maintenance Effectiveness

##### Maintenance Effectiveness (IP Section 03.01) (3 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' service water pump 'B' train breaker racking failure identified on April 27, 2021 (Condition Reports (CR) 10793414)
- (2) Unit 1 'C' charging pump balancing line leak identified on June 8, 2021 (CRs 10803900 and 10805059)
- (3) CRDM control cabinet room dampers required for halon system functionality (CR10750960)

##### Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

- (1) Unit 1 'A' train 4160 volt breaker replacements for the safety related loads implemented during the unit 1 refueling outage in March 2021 (DCP SNC1043391)

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

##### Risk Assessment and Management Sample (IP Section 03.01) (7 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) During the unit 1 'F' 4160 volt bus outage and breaker replacement that rendered the 1-2A emergency diesel generator unavailable for unit 2 on April 1 (NMP-DP-001)
- (2) Unit 1 'B' high head safety injection pump planned maintenance outage and unit 1 power ascension following the refueling outage on April 26, 2021 (NMP-DP-001)
- (3) Unit 1 'N' motor control center outage on May 17 and 18, 2021 (NMP-DP-001)
- (4) Fire pump house outage from May 4 and 5, 2021 (FNP-0-SOP-0.4; NMP-DP-001)

- (5) Unit 1 'B' service air compressor maintenance outage and the unit 2 'D' load center cooler outage on May 10 and May 11, 2021 (NMP-DP-001)
- (6) Loss of unit 1 'J' 4160 volt bus that impacted the availability of the station blackout emergency diesel generator and the electric fire pump on May 26, 2021 (CR10800855)
- (7) Unit 2 'B' residual heat removal pump planned maintenance outage resulting in yellow risk on June 29, 2021 (NMP-DP-001)

#### 71111.15 - Operability Determinations and Functionality Assessments

##### Operability Determination or Functionality Assessment (IP Section 03.01) (7 Samples)

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

- (1) Error identified in unit 1 and unit 2 steam line break mass and energy releases inside containment calculation identified on January 27, 2021, (CR10769642; CAR278847; TE1083446)
- (2) Unit 1 'A' train solid state protection system burnt wires discovered during a planned inspection of the power supply on March 30, 2021, during the unit 1 refueling outage (CR10786613)
- (3) Unit 1 motor driven auxiliary feedwater pump supply to the unit 1 'B' steam generator valve (HV3227B) indication issues from the control room identified on April 12, 2021 (CR10789923)
- (4) Unit 1 source range NI-31 circuit failure identified on April 7, 2021, (CR10788596; CR10789812)
- (5) Unit 1 'C' service water pump 'B' train breaker racking failure identified on April 13, 2021, (CR10790220; CR10790602)
- (6) Reactor coolant system flow calculation concerns using the precision calorimetric method identified on May 14, 2021, (CR10797899)
- (7) Unit 2 motor driven auxiliary feedwater pump feedwater supply valve (Q2N23FCV3227A) to the 'A' steam generator not opening manually from the main control board hand switch identified on June 4, 2021, (CR10802928)

#### 71111.18 - Plant Modifications

##### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (3 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) 1-2A emergency diesel generator unit 1 output breaker replacement during the unit 1 spring refueling outage in March through April 2021, (WO SNC1043391; SNC1100810; DECP SNC1043391)
- (2) Fire pump house isolation valve replacements and fire water outage with alternate water supply available (SNC1140350TCC)
- (3) Implementation of the measurement uncertainty recapture power uprate (0.7%) modification during the unit 1 spring 2021 refueling outage in March 2021 through April 2021 (WO SNC971517; FNP-1-SPETP-003)

#### 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 source range detector (NI-32) replacement during the unit 1 spring refueling outage in March through April 2021 (WO SNC514665)
- (2) Unit 1 turbine driven auxiliary feedwater pump servo positioner replacement during the unit 1 spring refueling outage in March through April 2021 (WO SNC1047884)
- (3) Unit 1 'B' charging pump run following the balancing line inspection and repair on April 26, 2021, (WO SCN1070637)
- (4) Unit 1 pressurizer spray valve (PCV-444C) replacement during the unit 1 refueling outage in April 2021 (WO SNC940005)
- (5) Emergency diesel generator '2C' functionality test following the restoration of the unit 1 'J' 4160 volt bus on May 28, 2021, (FNP-0-STP-80.17)
- (6) Unit 1 'B' service water pump motor replacement on June 18, 2021, (WO SNC701536, FNP-1-STP-24.1)
- (7) Unit 1 'B' service air compressor three-year preventive maintenance performed on May 10, 2021, (SNC1065214)

### 71111.20 - Refueling and Other Outage Activities

#### Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated unit 1 refueling outage 1R30 activities from March 21, 2021 to April 21, 2021, (FNP-0-UOP-4.0).

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) Unit 1 main steam isolation valve cold stroke time testing performed at the end of the unit 1 refueling outage in April 2021 (WO SNC893614; FNP-1-STP-45.7)
- (2) Unit 2 'B' reactor coolant pump 4160 volt bus undervoltage turbine driven auxiliary feedwater start relay test on May 5, 2021, (WO SNC1127513, SNC1127503; FNP-2-STP-912.1)
- (3) Unit 2 'B' train service water pump surveillance on June 29, 2021, (FNP-1-STP-24.2)

### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Unit 2 containment spray quarterly in-service test on May 19, 2021, (WO SNC1127384; FNP-2-STP-16.1)

### Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

- (1) Unit 1 containment purge supply (Penetration 12) and containment integrated leak evaluation on April 12-13, 2021, (FNP-1-STP-627.1)

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors observed a full participation drill on June 8, 2021, in which the technical support center, operation support center, and the control room (simulator) were fully staffed. Field monitoring teams and the emergency response teams participated as well. The drill involved drill and exercise performance indicator opportunities.

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

The inspectors evaluated:

- (1) A licensed operating crew during a simulator exam (Scenario 21-3) on June 21, 2021, that involved a drill and exercise performance indicator opportunity

**RADIATION SAFETY**

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas.

- (1) The inspectors reviewed the following:

Radiation Work Packages

- Radiation Work Permit (RWP) 1461 - Reactor head disassembly/reassembly
- RWP 1457 - Reactor coolant pump seal work
- RWP 1793 - Activities inside bio-wall
- RWP 1783 - Reactor vessel nozzle locked high radiation area (LHRA)
- RWP 1471 - Pressurizer spray valve 444C

Labeling of Containers

- Box of reactor head stud cleaning equipment outside the unit two equipment hatch
- Boxes of mechanical stress improvement project materials outside the unit two equipment hatch
- Staged "empty" radioactive shipping containers outside the unit one equipment hatch

Contamination and Radioactive Material Control (IP Section 03.03) (3 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

- (1) Observed licensee surveys of potentially contaminated material leaving the radiologically controlled area.
- (2) Observed workers exiting the unit one containment building during the 1R30 refueling outage.
- (3) Observed material and equipment being removed from unit one containment at the equipment hatch during 1R30 refueling outage.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (5 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) Reactor head disassembly/reassembly
- (2) Reactor coolant pump seal work
- (3) Activities inside bio-wall
- (4) Reactor vessel nozzle work
- (5) Pressurizer spray valves in LHRAs

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (3 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) Unit 2 containment building
- (2) Unit 1 seal injection filter room
- (3) Low level radwaste building

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.02 - Occupational ALARA Planning and Controls

Radiological Work Planning (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's radiological work planning.

The inspectors reviewed the following activities:

- (1) Micro ALARA Plan for RWP 21-1464, Lower internals lift and set
- (2) ALARA Plan for RWP 21-1783, Mechanical Stress Improvement Process (MSIP)
- (3) ALARA Plan for RWP 21-1471, Pressurizer Spray Valve 444C Replacement

- (4) ALARA Plan for RWP 21-1461, Reactor Head Disassembly and Reassembly

#### Verification of Dose Estimates and Exposure Tracking Systems (IP Section 03.02) (5 Samples)

The inspectors evaluated dose estimates and exposure tracking.

The inspectors reviewed the following as low as reasonably achievable planning documents:

- (1) 50% work in progress review for RWP 21-1461, Disassembly & reassembly of the Rx Head (3/27/2021)
- (2) 50% work in progress review for RWP 21-1471, Pressurizer valve V444C (4/7/2021)
- (3) 50% and 80% work in progress and Post-Job reviews for RWP 21-1783, Mechanical Stress Improvement Process (MSIP) (4/1/2021, 4/13/2021, and 5/12/2021 respectively)
- (4) 50% work in progress review for RWP 21-1793, Rx Vessel Nozzle Inspection (4/4/2021)
- (5) 50% work in progress review for RWP 21-1903, Scaffolding Activities (4/1/2021)

#### Implementation of ALARA and Radiological Work Controls (IP Section 03.03) (3 Samples)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls.

During the Unit 1 spring 2021 outage (1R30) inspection, the inspectors reviewed the following activities:

- (1) Reactor Head disassembly/reassembly - RWP 21-1461
- (2) Reactor vessel nozzle Mechanical Stress Improvement Process (MSIP) - RWP 21-1783
- (3) Reactor coolant pump seal work - RWP 21-1457

#### Radiation Worker Performance (IP Section 03.04) (1 Sample)

During the unit 1 spring 2021 outage (1R30) inspection, the inspectors evaluated radiation worker and radiation protection technician performance during:

- (1) Pressurizer spray valve 444C removal and replacement - RWP 21-1471

#### 71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

##### Walkdowns and Observations (IP Section 03.01) (4 Samples)

The inspectors evaluated the following radioactive effluent systems during walkdowns:

- (1) Unit 1, auxiliary building ventilation system discharge to main plant vent stack
- (2) Unit 2, auxiliary building ventilation system discharge to main plant vent stack
- (3) Liquid radwaste processing system (LRWPS) [shared system]
- (4) Portable demineralizer system [shared LRWPS]

#### Sampling and Analysis (IP Section 03.02) (4 Samples)

Inspectors evaluated effluent samples, sampling processes and compensatory samples, as available.

- (1) Unit 2 steam jet air ejector gaseous sampling (observed). Sample ID# 15Jun21-015 2RE28NG
- (2) Unit 2 plant vent stack weekly particulate and charcoal sampling (observed). Sample ID#s: 16Jun21-008 2RE29 particulate and 16Jun21-009 2RE29 charcoal
- (3) Unit 2 waste monitor tank #1 sampling and release. Batch liquid radioactive waste release permit # L-20210616-0424-B, Sample ID# 16Jun21-002, U2WMT #1
- (4) Unit 2 steam generator blowdown (5/05/2021 to 5/13/2021). Continuous liquid release permit # L-20210505-0360-C, Sample ID # 12May21-003, SGBD-2

#### Dose Calculations (IP Section 03.03) (3 Samples)

The inspectors evaluated the following dose calculations:

- (1) Unit 2 containment purge batch release 5/11/2021. Gaseous release permit # G-20210511-0336-B, sample ID # 10May21-002, U2 RE67 NG
- (2) Unit 1 plant vent stack continuous release 5/11/2021 to 5/19/2021. Gaseous release permit # G-20210511 -0335-C, sample ID# 17May21-010, 1RE29A
- (3) U-1 turbine building sump continuous release 5/3/2021 to 5/11/2021. Liquid release permit # L-20210503-0354-C, sample ID # 09May21-005, TBS-1

#### Abnormal Discharges (IP Section 03.04)

The inspectors evaluated the following abnormal discharges:

#### 71124.07 - Radiological Environmental Monitoring Program

##### Environmental Monitoring Equipment and Sampling (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated environmental monitoring equipment and observed collection of environmental samples.

##### Radiological Environmental Monitoring Program (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the implementation of the licensee's radiological environmental monitoring program.

##### GPI Implementation (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's implementation of the groundwater protection initiative program to identify incomplete or discontinued program elements.

#### 71124.08 - Radioactive Solid Waste Processing & Radioactive Material Handling, Storage, & Transportation

##### Radioactive Material Storage (IP Section 03.01) (1 Sample)

- (1) Inspectors evaluated the licensee's performance in controlling, labeling and securing radioactive materials.

Radioactive Waste System Walkdown (IP Section 03.02) (1 Sample)

- (1) Inspectors walked down accessible portions of the solid radioactive waste systems and evaluated system configuration and functionality.

Waste Characterization and Classification (IP Section 03.03) (2 Samples)

The inspectors evaluated the licensee's characterization and classification of radioactive waste.

- (1) 2020 dry active waste (DAW)
- (2) 2019 primary resin

Shipment Preparation (IP Section 03.04) (1 Sample)

- (1) The inspectors observed that a shipment containing radioactive material was prepared according to requirements.

Shipping Records (IP Section 03.05) (4 Samples)

The inspectors evaluated the following non-excepted radioactive material shipments through a record review:

- (1) Radioactive waste shipment (RWS) 19-15, type B, resin
- (2) RWS 19-21, type A, filters
- (3) RWS 20-01, low specific activity, DAW
- (4) Radioactive material shipment 20-56, type A and surface contaminated object, outage equipment

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS09: Residual Heat Removal Systems (IP Section 02.08) (2 Samples)

- (1) Unit 1 (April 1, 2020 - March 31, 2021)
- (2) Unit 2 (April 1, 2020 - March 31, 2021)

MS10: Cooling Water Support Systems (IP Section 02.09) (2 Samples)

- (1) Unit 1 (April 1, 2020 - March 31, 2021)
- (2) Unit 2 (April 1, 2020 - March 31, 2021)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) October 23, 2020 through March 31, 2021



PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample  
(IP Section 02.16) (1 Sample)

- (1) Unit 1 and unit 2 (October 1, 2020 through May 31, 2021)

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

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

- (1) Nuclear instrumentation system conditions for unit 1 and unit 2 between January 2020 and June 2021. This issue was selected for review due to the safety significance of the instrumentation for monitoring reactor power and preventing potential overpower conditions. The scope of review included source range, intermediate range, and power range nuclear instrumentation issues to ensure timely corrective actions were taken and technical specification requirements were met (U260268).
- (2) Unit 1 pressurizer relief tank increasing pressure trend following the spring 2021 refueling outage and identified on April 21, 2021. This issue was selected due to the concern about potential reactor coolant system leakage. The scope of the review included verification of the licensee's monitoring and troubleshooting plan to ensure timely actions would be taken to address any leakage concerns (CR10792282).

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following LERs:

- (1) LER 05000364/2020-001-00, Main Steam Safety Valve Lift Pressure Outside of T.S. Limits due to Setpoint Drift, (ADAMS Accession No. ML20338A131) and the subsequent revision, LER 05000364/2020-001-01, (ADAMS Accession No. ML2108A234). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153.
- (2) LER 05000348/2021-01-00, Automatic Reactor Trip due to Turbine Generator Trip (ADAMS Accession No. ML21172A303). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153.

Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the control room operator response to high bearing temperatures on the unit 1 'B' circulating water pump that required a power reduction of greater than 20% and tripping the aforementioned pump on June 11, 2021 (CR10804994; FNP-1-AOP-17; FNP-1-ARP-1.10).

**INSPECTION RESULTS**

Halon system damper failure
-----------------------------

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000364/2021002-01 Open/Closed	[H.3] - Change Management	71111.12
<p>The inspectors identified a Green NCV for failure to properly implement Operating License Condition for Fire Protection Conditions 2.C.(4) and 2.C.(6) for Units 1 &amp; 2 respectively and 10 CFR 50.48(c). Specifically, the licensee failed to scope fire dampers associated with functionality of the halon systems in the unit 1 and unit 2 CRDM control system cabinet rooms and communication rooms into the monitoring program as required by Section 2.6 of NFPA 805, 2001 edition.</p>			
<p><u>Description:</u> On October 27, 2020, an inadvertent halon actuation signal and injection occurred in the unit 2 CRDM control system cabinet room. Based on door fan pressurization testing for the room (RER SNC1147178), there are eight dampers required to close to maintain halon concentration limits when the system is actuated. Two of the eight dampers did not close when the event occurred (dampers 2-121-116-04 and 2-121-116-05). Upon further investigation, it was discovered one damper (2-121-116-04) mechanically bound in the open position and the other damper (2-121-116-05) remained open due to debris preventing actuation of the electrothermal link.</p> <p>Based on Farley's NFPA 805 Fire Protection Program Design Basis Document (A181805, version 6), the halon suppression systems for the unit 1 and unit 2 CRDM control system cabinet rooms (rooms 235 and 2235 respectively) and the communication rooms (rooms 202 and 2202 respectively) are classified as high safety significance in accordance with the NFPA 805 monitoring program. The high safety significance classification is based on the fire risk model crediting the halon suppression for the hot gas layer scenarios only. Therefore, availability and reliability of the halon suppression system is required to be monitored to ensure the assumptions in the engineering analysis associated with fire risk, the ability to safely shutdown, and prevent core damage remain valid.</p> <p>The Farley NFPA 805 monitoring program was fully implemented on August 13, 2015 in accordance with the commitments established in the original NFPA 805 licensing conditions approved for Farley unit 1 and unit 2 on March 10, 2015. Since August of 2015, the residents noted two opportunities the licensee had to evaluate and correct potential reliability concerns with halon dampers impacting functionality of a high safety significant halon system. On February 3, 2016 and May 6, 2018 respectively, a halon damper did not close upon a halon actuation in the unit 2 (damper 1-121-115-10) and unit 1 (damper 1-121-115-07) communication rooms due to a broken wire leading to the actuation device (CR10177632; CR10490083). Based on the door fan pressurization testing for the rooms (RER SNC1147178), the aforementioned dampers are required to maintain halon concentrations within the assumed limits.</p> <p>Based on inspector questioning and feedback in March 2021, the licensee determined that certain fire dampers required to close upon a halon actuation (i.e. halon dampers) were not previously scoped with the halon system as part of the monitoring program. However, upon further research, the licensee concluded that these dampers should be associated with the halon system and their failures have the potential to impact the availability and reliability of the associated high safety significant halon systems (CR10783794). The residents determined if the 2016 and 2018 halon damper failures had been considered with the halon system reliability and evaluated in accordance with the monitoring program, the failure that occurred on October 27, 2020 may have been prevented.</p>			

Corrective Actions: The licensee restored the failed dampers associated with the October 2020 event on December 10, 2020, (WO SNC1126587). The halon system from the same event was fully restored to functionality on December 17, 2020, (WO SNC1115099).

On June 4, 2021, the licensee implemented changes to associate applicable doors and dampers, including the dampers discussed above, to the halon system functionality in accordance with the monitoring program and by updating the associated calculation (TE1085041; Calculation SM-C051326701-015).

The licensee is changing preventive maintenance procedures to enhance inspections of the dampers required for halon functionality to prevent recurrence of the issue. The changes are in progress and being tracked in the corrective action program (TE1084651).

On June 4, 2021, the halon systems for the unit 1 and unit 2 communication rooms were reclassified as low safety significance, following a probability risk assessment update in accordance with NFPA 805 (Calculations SM-C051326701-015; SM-C051326701-17). A change to the NFPA 805 Fire Protection Program Design Basis Document (A181805, version 6) is in progress to reflect the new classification (SNC1155853M001). Based on this, scoping of the communication room halon systems is no longer specifically required in accordance with the licensee's NFPA 805 monitoring program.

Corrective Action References: Listed in the description and corrective action sections.

Performance Assessment:

Performance Deficiency: The failure to meet the requirements of NFPA 805, 2001 edition, Section 2.6, for monitoring of fire protection systems and features was a performance deficiency. Specifically, the licensee failed to scope fire dampers associated with functionality of the halon systems in the unit 1 and unit 2 communication and CRDM control cabinet rooms into the monitoring program. As a result, on several occasions the licensee failed to take appropriate actions required by the monitoring program for damper failures that should have been considered halon system functional failures.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The performance deficiency resulted in the unavailability of a fire suppression system to prevent or mitigate a fire and its potential impact on safe shutdown.

Significance: The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post - Fire Safe Shutdown SDP." The inspectors reviewed the impact of the performance deficiency and based the significance on the one single event related to halon damper failures with the potential for the greatest impact to safety, which was the damper failures in the unit 2 CRDM control system cabinet room in October of 2020. The inspectors assessed the finding using NRC Inspection Manual Chapter (IMC) 0609, Attachment 4 and determined the mitigating system cornerstone was degraded. The significance was determined using NRC IMC 0609, Appendix F and Appendix F, Attachment 2. The fire finding screened as high degradation because the halon system is a gaseous based system and the failure of the dampers to close will result in inadequate agent to achieve the required concentration (greater than or equal to 5%) for deep seated fires. Categorized as high

degradation and as a fixed fire protection system, the assessment leads to step 1.5 of IMC 0609, Appendix F for a senior reactor analyst to review the licensee's fire probabilistic risk assessment (PRA). The senior reactor analyst concluded the finding to be Green. This was based on an updated fire modeling evaluation for the unit 2 CRDM control cabinet room. The updated evaluation determined that there was an insufficient heat release rate for achieving a hot gas layer requiring halon system suppression, as was assumed in the original fire modeling analysis. The licensee performed the evaluation which was then reviewed by an NRC fire inspector and senior reactor analyst.

Cross-Cutting Aspect: H.3 - Change Management: Leaders use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. Specifically, the licensee updated their license condition and fire protection program in 2015 but failed to fully implement all the new requirements to prevent failure of required protective features. Although it has been greater than three years since Farley implemented NFPA 805, changes to the basis and implementing documents are made on a continuous basis based on new assumptions and analysis in which the change management should be accounted for accordingly.

Enforcement:

Violation: Joseph M. Farley Nuclear Plant Operating License Conditions 2.C.(4) and 2.C.(6) for Units 1 & 2 respectively, state, in part, Southern Nuclear Operating Company shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) (NFPA 805), as approved in the safety evaluation reports dated March 10, 2015, October 17, 2016, and November 1, 2017. Section 2.6 of NFPA 805 stated, in part, "A monitoring program shall be established to ensure that the availability and reliability of the fire protection systems and features are maintained and to assess the performance of the fire protection program in meeting the performance criteria."

Contrary to the above, the licensee failed to adequately establish a monitoring program to ensure that the availability and reliability of the fire protection systems and features were maintained. Specifically, the licensee failed to scope fire/smoke dampers associated with functionality of the Halon Systems in the unit 1 and unit 2 CRDM control cabinet and communication rooms into the monitoring program.

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

1J 4Kv bus inadvertent deenergization			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000348 05000364/2021002-02 Open/Closed	[H.12] - Avoid Complacency	71111.13
A self-revealed Green finding was identified when the licensee failed to properly implement NMP-GM-006,"Work Management," and NMP-AP-003, "Procedure and Work Instruction Use Adherence," which resulted in the unavailability of the station blackout diesel generator (SBO DG) and the electric fire pump.			
<u>Description:</u> On May 26, 2021, the unit 1 'J' 4160-volt bus unexpectedly deenergized during planned maintenance to replace a terminal block inside the number 4 river water pump			

breaker cubical (WO SNC59652). This terminal block provides an input to the bus's differential current protective circuitry. When the terminal block leads were lifted, the bus protective circuitry actuated, which deactivated the bus and placed the bus in a lockout status. This rendered the station blackout diesel generator (SBO DG) unavailable for unit 1 and the electric fire pump unavailable for unit 1 and unit 2. Following troubleshooting and repairs, the bus was placed back in service on May 28, 2021 which restored availability of the SBO DG and electric fire pump.

The licensee determined that replacement of the terminal block was originally scheduled to be completed during a unit 1 "J" bus outage (bus completely deenergized) in 2017 but was later canceled. While planning for a 2021 number 4 river water pump breaker preventive maintenance (PM) work order, it was decided to reschedule the terminal block replacement at the same time. However, the breaker PM did not require the bus to be deenergized as the breaker is physically removed from the bus cubicle to perform any work. For the 2021 work, at no point in the work management and execution process did the station recognize that the terminal block replacement required a deenergized bus and an associated equipment clearance order to perform the work safely.

The inspectors determine there were three distinct performance deficiencies that led to the lockout of the unit 1 'J' 4160-volt bus. One was the failure to follow the standards in Section 4.3 of NMP-GM-006 that delineates the work management process for scheduling. The second was the failure to adhere to the shift authorization requirements per Attachment 3 of NMP-GM-006 for proper work release and authorization of field work. The third was the failure to follow the standards of NMP-AP-003 when implementing the work instructions. Each one is described below.

NMP-GM-006, "Work Management" – Scheduling of Work:

The licensee failed to properly implement the requirements in NMP-GM-006, "Work Management," Section 4.3, for scheduling of the terminal block work order. The potential restraints were not identified in accordance with Section 4.3 and NMP-GM-006, Attachment 1, "Process Map," Specifically, it was not identified that the terminal block replacement required an equipment clearance order to deenergize the unit 1 'J' 4160-volt bus.

NMP-GM-006, "Work Management" – Shift Authorization:

The licensee failed to properly implement the release and authorization of work. Station procedure NMP-GM-006, Attachment 3, "Shift Authorization Guidelines," requires, in part, shift authorization before all maintenance field activities with exceptions. The terminal block replacement did not meet any of the exception criteria. Specifically, the work order for the job should have been electronically tied to a clearance, but this was not the case.

NMP-AP-003, "Procedure and Work Instruction Use Adherence" – Tag Verification:

The licensee failed to properly implement the NMP-AP-003 when performing work instructions, which require in part, personnel to follow documents exactly as written, understand the impact of actions, and stop if there are concerns or questions and obtain resolution before proceeding. The second step of the work instruction required tag verification to ensure safe work conditions. This was not done while preparing for the work or while executing the work in the field. The terminal block was not tagged out and the technicians did not understand the impact of their actions before proceeding.

Corrective Actions: An incident response team was assembled to determine the immediate cause and to restore the bus. The unit 1 'J' 4160-volt bus and associated equipment, SBO

DG and electric fire pump, were restored on May 28, 2021 (WO SNC1127398; SNC1160000).

An evaluation is in progress to document the cause and resolution (CAR279352).

Corrective Action References: CR 10800855 documents the event.

Performance Assessment:

Performance Deficiency: The licensee failed to properly implement the procedures for managing and implementing work. Specifically, the licensee failed to follow the standards for scheduling and releasing work in accordance with NMP-GM-006, "Work Management." In addition, the licensee failed to properly implement tag verification for the actual terminal block replacement in accordance with the standards in NMP-AP-003, "Procedure and Work Instruction Use and Adherence."

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the performance deficiencies were more than minor because it was associated with the equipment reliability attribute of the reactor safety Mitigating Systems cornerstone and adversely affected the cornerstone objective of availability and reliability. Specifically, the failure to follow the standards for (1) work scheduling, (2) release and authorization, and (3) tag verification resulted in unplanned availability of the SBO DG and electric fire pump.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." It was determined that the degraded condition represented a loss of the probability risk assessment functions for risk-significant equipment, SBO DG and electric fire pump, for less than three days.

Cross-Cutting Aspect: H.12 - Avoid Complacency: Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. In this event, different individuals and multiple departments assumed a rescheduled work order would meet current conditions without validating the impact.

Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

Enforcement Discretion	Enforcement Action EA-21-054: Failure to Comply with 10 CFR 37 for the Protection of Disused Steam Generators Stored in a Concrete Storage Module	71124.08
------------------------	---	----------

Description: During the 1R16 (spring 2000) and 2R14 (spring 2001) refueling outages, the licensee removed old steam generator units from the unit 1 and unit 2 containment buildings and transferred them to a large concrete storage module. Although this waste material exceeded the threshold for a Category 2 quantity of radioactivity, it did not contain

discrete radioactive sources, ion-exchange resins, or activated material that weighed less than 2,000 kg. Therefore, the steam generators are considered waste material that is exempt from 10 CFR 37 Subparts B, C, and D, but must comply with the requirements of 10 CFR 37.11. The inspectors observed that some of these requirements were not met.

Corrective Actions: The licensee entered the issue into their corrective action program.

Corrective Action References: CR 10787431

Enforcement:

Violation: 10 CFR 37.11 specifies certain minimal security requirements for a Category 2 quantity of radioactive waste that is exempt from 10 CFR 37 Subparts B, C, and D. Contrary to this, from March 19, 2014 (initial compliance date with 10 CFR 37) to the present, the licensee has stored a Category 2 quantity of exempt waste in a large concrete storage module without meeting all of the security requirements of 10 CFR 37.11.

Basis for Discretion: This violation met the criteria for Enforcement Discretion as described in Enforcement Guidance Memorandum (EGM) 14-001, "Interim Guidance for Dispositioning 10 CFR Part 37 Violations with Respect to Large Components or Robust Structures Containing Category 1 or Category 2 Quantities of Material at Power Reactor Facilities Licensed Under 10 CFR Parts 50 and 52."

Exciter Testing Results in Unit 1 Reactor Trip

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000348/2021002-03 Open/Closed	[H.2] - Field Presence	71153

A self-revealed Green finding and associated NCV of 10 CFR 50.65 (a)(4) was identified when the licensee failed to assess the risk associated with the main generator exciter testing leading to a reactor trip. Specifically, the licensee failed to recognize the risk of a reactor trip introduced by the data gathering and testing activities associated with the main generator exciter.

Description: On April 22, 2021, Farley Unit 1 was at 48 percent RTP following a refueling outage. Main generator exciter switchgear power ascension testing was in progress and being performed by a vendor in accordance with work order SNC1153895, "Perform Partial Test of Exciter Using FNP-1-SPETP-002," and procedure FNP-1-SPETP-002, "Modification Testing for Unit 1 Main Generator Exciter Switchgear Replacement." During the testing, an overvoltage relay was inadvertently set to zero by a human performance error via the computer / touchscreen interface. This resulted in a cascading generator trip, turbine trip, and an automatic reactor trip.

Procedure NMP-DP-001, "Operational Risk Awareness," Attachment 1, "Prescreened Work Activities," requires that work involving the main generator and access to the setup functions of a relay to be classified as high risk. Additionally, NMP-DP-001, step 4.4, "Planning for High Risk Activities/task," requires that work classified as high risk to have risk mitigating actions associated with it. Contrary to these requirements, work order SNC1153895 was categorized as having a low operational risk and therefore did not have the appropriate risk mitigating actions. With a low risk classification, the licensee failed to recognize that a reactor trip could result from an error in data entry. Therefore, the main generator exciter testing was

conducted without the required risk mitigation actions to prevent a human performance error.

The licensee determined that work order SNC1153895 was planned and screened for risk as part of outage activities, when there was no risk of a reactor trip. The work order did not include a clear delineation between outage and online activities. Additionally, the licensee had a previous opportunity to recognize this potential for a reactor trip. On April 19, 2021, testing under this work order caused a generator and turbine trip but did not result in a reactor trip. However, this generator and turbine trip should have led to additional review of the work instructions and a recognition that the later steps of procedure FNP-1-SPETP-002, with the reactor at higher power, could result in a reactor trip.

LER 05000348/2021-001-00, "Joseph M. Farley Nuclear Plant, Unit 1, Automatic Reactor Trip due to Turbine Generator Trip," was submitted by the licensee for this event.

Corrective Actions: The licensee's immediate corrective actions were to correct the overvoltage relay setting, conduct training with all individuals involved in the testing, and to increase oversight of the vendor performing the exciter testing. Long term corrective actions include improving risk management for outage activities that are transitioned to on-line work and increased vendor oversight for vendors controlling plant equipment.

Corrective Action References: CR 10792481 and CR 10801557

Performance Assessment:

Performance Deficiency: The inspectors determined that failure to follow the requirements of procedure NMP-DP-001, "Operational Risk Awareness," was a performance deficiency that was within the licensee's ability to foresee and prevent.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, an inadequate classification of risk for the main generator exciter testing work order and a lack of risk awareness associated with the testing, allowed for a human performance data entry error that led to an automatic reactor trip.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 1, "Initiating Events Screening Questions," Block B, "Transient Initiators." The inspectors determined that this finding was of very low safety significance (Green) because, although it did cause a reactor trip, it was not coincident with the loss of mitigation equipment relied upon to transition the plant from the onset of a reactor trip to a stable shutdown condition.

Cross-Cutting Aspect: H.2 - Field Presence: Leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations are corrected promptly. Senior managers ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. Specifically, the licensee failed to provide adequate oversight of the vendor conducting the testing and failed to ensure the vendor employees were aware of the risk associated with the main generator exciter testing.

Enforcement:



Violation: 10 CFR 50.65 (a)(4) requires in part that, before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, as of April 22, 2021, the licensee failed to adequately identify and assess the risk for testing activities associated with the exciter.

Enforcement Action: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

**Main Steam Safety Valve Lift Pressure Outside of T.S. Limits Due to Setpoint Drift**

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000364/2021002-04 Open/Closed	Not Applicable	71153

A self-revealed SL IV NCV of T.S. 3.7.1, "Main Steam Safety Valves," was identified when a routine lift pressure test revealed that the 'C' main steam line 'D' safety valve (Q2N11V0012D) was lower than allowed by T.S.

Description: On October 6, 2020, while in mode 1, before the Farley Nuclear Plant unit 2 October 2020 refueling outage, the 'C' main steam line 'D' safety valve (Q2N11V0012D) as-found lift pressure did not meet the acceptance criteria of plus or minus three percent of the setpoint (1115 psig) as required for operability and the T.S. table 3.7.1-2. The valve lifted low at 1065 psig, which is 17 psig outside of its acceptance range of 1082 to 1148 psig. The valve was installed and placed in service at Farley Nuclear Plant unit 2 on March 31, 2016.

LER 05000364/2020-001-00, "Main Steam Safety Valve Lift Pressure Outside of Technical Specification Limits due to Setpoint Drift," was submitted by the licensee for this event. A revision, LER 0500364/2020-001-01, was submitted to address an error in the original failure analysis. The final failure analysis was Setpoint Drift due to inherit stresses created by the fabrication process of the spring.

Corrective Actions: Main steam safety valve Q2N11V0012D setpoint was adjusted to within the T.S. as-left requirement of plus or minus one percent of the setpoint (1115psig) on October 6, 2020. The same valve was then replaced with a refurbished and tested valve during the unit 2 October 2020 refueling outage. Additional corrective actions are in place to enhance the testing procedures of new or refurbished valves to prevent recurrence.

Corrective Action References: CR 10744009 and CR 10769996

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 setpoint did not have an adverse impact on

steam generator over-pressurization protection of 1194 psig or the ability of the steam generator to serve as an adequate heat sink. Therefore, the plant remained bounded by the accident analysis in the FSAR, based on the as-found condition.

Violation: Farley Nuclear Plant unit 2 T.S. LCO 3.7.1, "Main Steam Safety Valves," requires five operable safety valves per steam generator with a lift setting of plus or minus three percent of the value corresponding to each valve in accordance with table 3.7.1-2, while the unit is in modes 1, 2, and 3. With one main steam safety valve inoperable, Action Statement, Condition "A" Required Action "A.1," requires reactor power to be reduced to less than or equal to 87 percent RTP within four hours. If the required action and associated completion time is not met, Action Statement, Condition "C," requires that the unit to be in mode 3 within six hours. Contrary to the above, the licensee determined the main steam safety valve setting was outside the T.S. limits longer than 10 hours since the C main steam line 'D' safety valve was installed while unit 2 was in mode 1.

Enforcement Action: This violation is being treated as a NCV, 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 July 22, 2021, the inspectors presented the integrated inspection results to Charles Kharrl and other members of the licensee staff.
- On April 2, 2021, the inspectors presented the RP Inspection Exit Meeting inspection results to Chuck Kharrl, Site Vice President and other members of the licensee staff.
- On June 24, 2021, the inspectors presented the RP Inspection Exit Meeting inspection results to C. Kharrl and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.01	Procedures	NMP-HP-001	Radiation Protection Standard Practices	Version 7.1
71124.01	Procedures	NMP-HP-300	Radiation and Contamination Surveys	Version 5.5
71124.01	Procedures	NMP-HP-301	Airborne Radioactivity Sampling and Evaluation	Version 4.3
71124.01	Procedures	NMP-HP-305	Alpha Radiation Monitoring	Version 5.11
71124.01	Procedures	NMP-HP-306	Radiological Job Coverage	Version 1.2
71124.01	Procedures	NMP-HP-404	Release of Materials from the RCA and Protected Areas	Version 4.4
71124.02	ALARA Plans		Farley Nuclear Plant - Plant ALARA Review Committee Minutes January through December 2020	Various
71124.02	ALARA Plans		Farley Radiation Protection Exposure Reduction Plan 2021	January 2021
71124.02	ALARA Plans		Farley Reactor Services Exposure Reduction Plan 2021	March 2021
71124.02	ALARA Plans		U1R30 Outage RWP Projected vs. Actual Dose Comparison	6/17/2021
71124.02	ALARA Plans	21-1783	Mechanical Stress Improvement Process (MSIP)	
71124.02	Miscellaneous		PLANT FARLEY 2019 RP Annual Review	4/24/2020
71124.02	Miscellaneous		PLANT FARLEY 2020 RP Annual Review	2/26/2021
71124.02	Miscellaneous		Plant Farley 2019 1R29 Outage Report	2/14/2020
71124.02	Miscellaneous		2021 Farley Operations Dose Reduction Plan	3/16/2021
71124.02	Procedures	NMP-HP-204	ALARA Planning and Job Review	Version 9.1
71124.06	Calculations		Joseph M Farley Nuclear Plant Liquid and Gas Maximum Dose Summary Report	6/4/2021
71124.06	Calculations	DAW 091420-V	10 CFR Part 61 Waste Characterization - Dry Active Waste	9/14/2020
71124.06	Corrective Action Documents		CRs: 10427754, 10632577, 10639875, 10645734, 10648045, 10695488, 1066602, 10743364, 10746697, 10771617, 10787755, 10795319, and 10742822	Various
71124.06	Corrective Action Documents		Corrective Action Reports (CARs): 277508, and 278444	Various
71124.06	Corrective Action Documents		Technical Evaluations (TEs): 997628, 1063523, 1064137, 1064138, 1066602, 1066603, 1075317, and 1081075	Various
71124.06	Corrective Action Documents Resulting from Inspection		The following CRs were written based on NRC inspector comments or observations 10806283, 10806313	6/16/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.06	Engineering Changes	LDCR2007069	Licensing Document Change Request for DCP C071193601, Farley Unit 1 & 2 Liquid Radwaste Processing Facility	Version 3.0
71124.06	Miscellaneous		Farley Nuclear Plant Radiochemistry Interlaboratory Cross Check Sample Results - 2nd Quarter 2019	12/18/2019
71124.06	Miscellaneous		Farley Nuclear Plant Radiochemistry Interlaboratory Cross Check Sample Results - 2nd Quarter 2020	4/27/2021
71124.06	Miscellaneous		List of Out of Service Effluent Radiation Monitors Requiring Compensatory Sampling since July 1, 2019 (including dates and times)	6/14/2021
71124.06	Miscellaneous		Joseph M. Farley Nuclear Plant – Units 1&2 Annual Radioactive Effluent Release Report for 2020	April 2021
71124.06	Miscellaneous		Joseph M. Farley Nuclear Plant Updated Final Safety Analysis Report Chapter 11	Revision 30
71124.06	Miscellaneous		Joseph M. Farley Nuclear Plant – Units 1&2 Annual Radioactive Effluent Release Report for 2019	April 2020
71124.06	Miscellaneous	FNP-0-ENV-799.0	Joseph M. Farley Nuclear Plant Land Use Census	December 2020
71124.06	Miscellaneous	PMCR 79893	Preventive Maintenance Change Request to Extend the frequency of the Unit 1 and Unit 2 Containment Purge Filter Testing from 54 months to 72 months	3/2/2015
71124.06	Procedures		Offsite Dose Calculation Manual for Joseph M. Farley Nuclear Plant	Version 28 (December 2020)
71124.06	Procedures	FNP-0-CCP-212	Liquid Waste Release Program	Version 22.0
71124.06	Procedures	FNP-0-CCP-213	Gaseous Waste Release Program	Version 56.0
71124.06	Procedures	FNP-0-CCP-218	Preparation of The Radioactive Effluent Release Report	Version 17.0
71124.06	Procedures	FNP-1-CCP-203	Chemistry and Environmental Group Considerations During Operational Transients	Version 72.0
71124.06	Procedures	FNP-1-STP-227.53	Plant Vent Gas (GGG) Monitor N1D11RE0029B Detector Calibrations	Version 2.0
71124.06	Procedures	FNP-1-STP-227.55	Plant Vent Stack Monitor (P.I.G.) N1D11RE0029C Detector Calibrations	Version 1.0
71124.06	Procedures	FNP-2-CCP-	Sampling Points For Potential Radiological Effluents	Version 56.2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		643.0		
71124.06	Work Orders	SNC1002543	Perform N1D11RE0029C Calibration [Plant Vent Stack Wide Range Noble Gas Monitor]	8/17/2020
71124.06	Work Orders	SNC1011285	Calibrate N2D11RE0018, Unit 2 Liquid Waste Effluent Monitor	5/1/2020
71124.06	Work Orders	SNC1012613	Calibration of Unit 1 Plant Vent Stack Effluent Monitor RE29B Low Range Detector	1/6/2020
71124.06	Work Orders	SNC1012616	Calibration of Unit 1 Plant Vent Stack Effluent Monitor RE29B Mid Range Detector	3/18/2020
71124.06	Work Orders	SNC1012619	Calibration of Unit 1 Plant Vent Stack Effluent Monitor RE29B High Range Detector	3/3/2020
71124.06	Work Orders	SNC401395	Unit 1 Containment Purge Exhaust Filtration Performance Test	10/07/2016
71124.06	Work Orders	SNC428396	Unit 2 Containment Purge Exhaust Filtration Performance Test	11/4/2020
71124.06	Work Orders	SNC613187	Unit 1 Containment Purge Exhaust Filtration Inspection	9/20/2016
71124.06	Work Orders	SNC992769	Unit 1 Penetration Room Filtration Performance Test	4/15/2020
71124.07	Calibration Records	WO SNC1073252	Loop Calibration Primary & Secondary Meteorological Station	11/17/2020
71124.07	Corrective Action Documents	CR 10664720		11/15/2019
71124.07	Corrective Action Documents Resulting from Inspection	CRs 10806344, 10806016, 10806521, and 0806686	Condition reports written as a result of inspector's observations and comments	Various
71124.07	Procedures	FNP-0-ENV-791.0	Air Particulates and Iodine Sampling	Ver. 12.0
71124.07	Procedures	NMP-EN-002-001	Radiological Groundwater Protection Program Technical Basis	Ver. 1.0
71124.07	Procedures	NMP-EN-002-GL01	FNP Groundwater Monitoring Plan for Radionuclides	Ver 1.1
71124.08	Corrective Action Documents Resulting from	CR 10787388		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Inspection			
71124.08	Corrective Action Documents Resulting from Inspection	CR 10787431		
71124.08	Corrective Action Documents Resulting from Inspection	CR 10787508		
71124.08	Corrective Action Documents Resulting from Inspection	CR 10787519		
71124.08	Corrective Action Documents Resulting from Inspection	CR 10787522		
71124.08	Corrective Action Documents Resulting from Inspection	CR 10787525		
71124.08	Procedures	NMP-HP-408	Solid Radioactive Waste Scaling Factor Determination and Implementation and Waste Classification	Ver. 2.0
71124.08	Procedures	NMP-SE-018-001	Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material - Farley Nuclear Plant Instruction	Ver. 4.0
71151	Miscellaneous		FARLEY NUCLEAR PLANT ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - CALENDAR YEAR 2020	April 2021
71151	Miscellaneous		Joseph M Farley Nuclear Plant Year to Date Liquid and Gas Maximum Dose Summary Report	6/4/2021
71152	Corrective Action Documents	CRs 10687748, 10691444, 10752044, 10759093, 10771996,		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		10785049, 10789812, 10790369, 10790867, 10791129, 10792516, and 10792565		