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

August 8, 2018

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

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000348/2018002 AND 05000364/2018002

Dear Mr. Madison:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Joseph M. Farley Nuclear Plant, Units 1 and 2. On July 17, 2018, NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented five findings of very low safety significance (Green) in this report. The findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of the NCVs, 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 the Joseph M. Farley Nuclear Plant, Units 1 and 2.

If you disagree with a cross-cutting aspect assignment 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; the Director, Office of Enforcement; and the NRC resident inspector at the Joseph M. Farley Nuclear Plant, Units 1 and 2.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.”

Sincerely,

/RA/

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

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

Enclosure:
IR 05000348/2018002, 05000364/2018002

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DATE	8/6/2018	8/8/2018				

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	50-348, 50-364
License Numbers:	NPF-2, NPF-8
Report Numbers:	05000348/2018002; and 05000364/2018002
Enterprise Identifier:	I-2018-002-0032
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Joseph M. Farley Nuclear Plant
Location:	Columbia, Alabama
Inspection Dates:	April 1, 2018 to June 30, 2018
Inspectors:	P. Niebaum, Senior Resident Inspector K. Miller, Resident Inspector R. Carrion, Senior Reactor Inspector (71111.08) A. Nielsen, Senior Health Physicist (71124.05) W. Pursley, Health Physicist (71124.01, 71124.03, 71151) J. Rivera, Health Physicist (71124.02, 71124.04, 71151) D. Mas-Peñaranda (71111.12, 71151, 60855.1)
Approved By:	A. Blamey, Chief Reactor Projects Branch 2 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting baseline inspections at Joseph M. Farley, Units 1 and 2 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below. Licensee-identified non-cited violations are documented in report sections: 71111.15, Operability Determinations and Functionality Assessments and 71153, Follow-up of Events and Notices of Enforcement Discretion.

List of Findings and Violations

High vibrations on the '1B' Charging pump			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-01 Open/Closed	H.1 - Resources	71111.12 - Maintenance Effectiveness
A green self-revealed Non-Cited Violation (NCV) of Technical Specification 5.4.1, "Procedures" was identified for the failure to provide adequate work order (WO) instructions in work order SNC531734 for the '1B' charging pump preventive maintenance on January 31, 2017. Excess grease was added to the pump shaft coupling which resulted in vibration amplitude above the required action range on the pump outboard bearing during a surveillance test on April 28, 2018.			

Failure to develop adequate PM for diesel generator relays			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-02 Open/Closed	P.3 - Resolution	71111.19 - Post Maintenance Testing
A green self-revealed violation of Technical Specifications 5.4.1, "Procedures" was identified on May 16, 2018 when the 1B diesel generator (DG) failed to adequately load during a subsequent restart while performing FNP-1-STP-80.6, "Diesel Generator 1B 24 Hour Load Test", Ver. 34.1. The licensee later determined that normally closed contacts on relay K3 associated with the field flashing circuit had high resistance which prevented proper field flashing of the diesel generator and resulted in 1B DG inoperability.			

Failure to Calibrate Portable Radiation Survey Instruments			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000348/364/ 2018002-03 Opened/Closed	H.1 – Resources	71124.05 - Radiation Monitoring Instrumentation
An NRC-identified, green, NCV of 10 CFR 20.1501(c) was identified for the licensee's failure to periodically calibrate portable instruments for the radiation measured. Specifically, high-range Geiger-Mueller (GM) survey instruments were not being calibrated for use above 300 R/hr.			

Failure to implement timely corrective actions for charging pump discharge check valves			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348,364/2018002-04 Open/Closed	H.10 – Basis for Decisions	71152 - Problem Identification and Resolution
A green self-revealed NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" was identified for the licensee's failure to promptly identify and correct a condition adverse to quality associated with the Unit 1 and 2 charging pump discharge check valves. Specifically, on July 30, 2014, condition report 846971 documented a green NCV due to inadequate acceptance criteria for testing check valves. The corrective actions to revise the acceptance criteria for these check valves were not implemented promptly. As a result, the licensee missed an opportunity to identify degradation of the check valves until April 2018 when the Unit 1 'A' and 'C' and the Unit 2 'C' charging pump discharge check valves did not pass their surveillance tests when tested using the updated acceptance criteria.			

Failure of a Main Steam Isolation Valve on the 'C' Steam Line			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-05 Open/Closed	H.1 - Resources	71152 - Problem Identification and Resolution
A green self-revealed NCV of Technical Specifications 5.4.1, "Procedures" was identified for the failure of the licensee to provide adequate procedural guidance in FNP-0-MP-39.0, "Main Steam Isolation Valve Disassembly and Reassembly" to maintenance personnel for assembling the main steam isolation valve (MSIV) disc arm to the disc. As a result, MSIV 3370C failed, which resulted in partial blockage of the 'C' steam line on March 25, 2018, while the plant was operating at approximately full rated power. The valve disc in the swing-type MSIV separated from the disc arm and fell into the steam flow path. Specifically, the four bolts holding the disc to the arm broke, due to disc to disc arm fluttering, as a result of improper assembly.			

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
Licensee Event Report (LER)	05000364/2017-005-00	Power Range Nuclear Instrument Inoperable Due to Poor Connection of High Voltage Cable Connector on June 19, 2018	71153(1)	Closed
LER	05000364/2017-004-00	Turbine-Driven Auxiliary Feedwater Pump Steam Admission Valve Air Leak Resulted in a Condition Prohibited by Technical Specifications	71153(2)	Closed

PLANT STATUS

Unit 1 began the report period in Mode 3 as a result of a forced outage to repair a main steam isolation valve. Unit 1 started up on April 1 and closed the main generator output breaker and achieved approximately 48 percent rated thermal power (RTP) on April 3. Unit 1 remained at approximately 48 percent RTP until it was shutdown for a refueling outage on April 8. Following completion of the refueling outage, Unit 1 was restarted on May 9 and shut down on May 13 due to a degraded condenser vacuum. Unit 1 was restarted on May 14 following replacement of a moisture separator reheater (MSR) relief valve, and later on May 14 the main generator output breaker was closed. Unit 1 achieved 100 percent RTP on May 20. Unit 1 remained at or near 100 percent RTP for the remainder of the inspection period.

Unit 2 began the report period at approximately 100 percent RTP. On May 31, Unit 2 reduced power to approximately 62 percent to support work in the high voltage switchyard and on the 2A steam generator feed pump. On June 2, Unit 2 achieved 100 percent RTP. Unit 2 operated at or near 100 percent RTP for the remainder of inspection 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."

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Summer Readiness (1 Sample)

The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems on June 6, 2018.

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for tropical storm Alberto on May 25, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (3 Samples)

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

(1) Unit 1 Containment Spray System, 'A' Train, on May 15, 2018
(2) Units 1 and 2 shared '1C' diesel generator (DG) while the '1B' DG was out of service (OOS) for corrective maintenance on May 17, 2018
(3) Unit 2 '2B' motor driven auxiliary feedwater pump while the Unit 2 turbine driven auxiliary feedwater pump was OOS for maintenance on May 24, 2018

71111.05AQ - Fire Protection Annual/Quarterly

Quarterly Inspection (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas on May 30, 2018:

(1) Unit 1, Room 0181 – 1A Charging/Safety Injection Pump Room, Fire Area 1-005, Fire Zone 0181
(2) Unit 1, Room 0182 – Contaminated Storage Room, Fire Area 1-005, Fire Zone 0182
(3) Unit 1, Room 0183 - Tendon Access Gallery, Fire Area 1-001, Fire Zone 0183
(4) Unit 1, Room 0184 – Piping Penetration Room, El. 100'-0", Fire Area 1-001, Fire Zone 0184

71111.08 - Inservice Inspection Activities (1 Sample)

The inspectors evaluated pressurized water reactor non-destructive testing by reviewing the following examinations from April 9 – 13, 2018:

(1) Magnetic Particle (MT)
  a) Magnetic Particle Examination of Welds 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 23, and 24 of the Service Water Backwash Piping Line per Work Order SNC899664. ASME Class 3 piping. This review involved a pressure boundary weld. (reviewed)

(2) Ultrasonic (UT)
  a) Report Number S18F1U001, Ultrasonic Examination of ALA2-4150-17-RB, Pipe to Elbow Weld on RHR Piping. ASME Class 2. (observed)
  b) Report Number S18F1U002, Ultrasonic Examination of ALA2-4150-18-RB, Elbow to Pipe Weld on RHR Piping. ASME Class 2. (observed)
  c) Report Number S18F1U003, Ultrasonic Examination of ALA2-4150-19-RB, Pipe to Pipe Weld on RHR Piping. ASME Class 2. (observed)

(3) Visual (VT-2)
  a) Visual Examination of ALA1-1100C, Reactor Pressure Vessel BMI/System Leakage. ASME Class 1. (reviewed)
  b) Visual Examination of Q1G31V017 (Welds 2FA and 3F) – Spent Fuel Pool Cooling Loop Return Drain per Work Order SNC821074 to comply with December 6, 2016, letter from NRC. ASME Class 3. This review involved a pressure boundary weld. (reviewed)
  c) Visual Examination of Welds 2F, 5F, and 6F – Service Water Strainer & Pump Motor Cooling Water Supply per Work Order SNC706842. ASME Class 3. This review involved a pressure boundary weld. (reviewed)
  d) Bare Metal Visual Examination of the penetrations of the Reactor Vessel Closure Head. ASME Class 1. (reviewed)

(4) Visual (VT-3)
   a) Report Number S18F1V039, Visual Examination of ALA1-4102-SI-R118, Hydraulic Snubber on Safety Injection Piping – ASME Class 1. (observed)

The Inspectors evaluated the licensee's boric acid control program performance.

71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated a crew of licensed operators in the plant's simulator during licensed operator requalification training on May 30, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated the dilution of Unit 1 to critical during low power physics testing on May 9, 2018.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

(1) Unit 1 turbine driven auxiliary feedwater pump steam admission valve failure on April 8, 2018
(2) Unit 1, high vibration amplitude on the '1B' Charging Pump during FNP-1-STP-4.11, "Charging Pump Biennial Comprehensive Inservice Test", on April, 28, 2018

71111.13 - Maintenance Risk Assessments and Emergent Work Control (5 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Unit 1 elevated risk due to '1B' containment spray pump equipment outage on May 15, 2018
(2) Unit 2 elevated risk with divers in the service water intake pump pit, the '2B' charging pump lined up as the 'B' train HHSI pump since the '2C' charging pump is OOS, and the '2C' battery charger on service for the '2B' battery charger on May 17, 2018
(3) Unit 1 elevated risk while the '1B' DG was OOS for corrective maintenance on May 17, 2018
(4) Unit 2 elevated risk while the turbine driven auxiliary feedwater pump was OOS for maintenance on May 24, 2018
(5) Unit 2 elevated risk due to tripping of the 230 kV supply to the 2A startup transformer on June 1, 2018

71111.15 - Operability Determinations and Functionality Assessments (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) The 1-2R load center failed to auto transfer to Unit 2 during performance of the FNP-1-STP-80.14A “A Train LOSP Test”, on April 9, 2018.
(2) Pressurizer Power Operated Relief Valves (PORV) PCV-445A limit switch setup on April 24, 2018.
(3) Quarterly ‘1A’ and ‘1B’ RHR pump surveillance tests performance trends on March 3, 2018 and February 20, 2018, respectively.
(4) ‘1B’ motor driven auxiliary feedwater pump step change in performance on April 7, 2018.
(5) ‘1A’ RHR mini-flow valve (FCV-602A) opening while ‘1A’ RHR on service for shutdown cooling on May 3, 2018.
(6) ‘1A’ atmospheric relief valve (ARV) did not stroke manually using the potentiometer at the associated control station on the hot shutdown panel (HSP) on May 1, 2018.

71111.18 - Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

(1) Removal of temporary configuration change (TCC) SNC821047, Spent Fuel Pool Cooling Loop Drain Valve Q1G31V017 Furmanite Clamp

71111.19 - Post Maintenance Testing (6 Samples)

The inspectors evaluated the following post maintenance tests:

(1) FNP-1-STP-45.7, MSIV and Bypass Valves Inservice Test, after main steam isolation valve Q1N11V0002C inspection and rework on April 2, 2018
(2) FNP-1-STP-11.1, 1A RHR Pump Quarterly Inservice Test, after replacement of motor Q1E11M0001A for the ‘1A’ residual heat removal pump on April 23, 2018
(3) FNP-1-STP-228.2, Nuclear Instrumentation System Source Range Channel N32 Calibration and Operational Test N1C55NE0032 on April 27, 2018
(4) FNP-1-STP-80.6, Diesel Generator 1B 24 Hour Load Test, Ver. 34.1, after replacement of the K3 relay in the generator excitation circuit on May 18, 2018
(5) FNP-0-SPEMP-0001, Special Purpose Procedure: Colt-Pielstick (1B) Diesel Governor Fine Tuning and Testing, Ver. 2.0, on April 27, 2018
(6) FNP-0-SOP-38.0-2B, 2B Diesel Generator and Auxiliaries, Ver. 14.1, following rework of jacket water keep warm piping system, on March 23, 2018

71111.20 - Refueling and Other Outage Activities (1 Sample)

The inspectors evaluated Unit 1 refueling outage 1R28 activities from April 8, 2018 to May 14, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (2 Samples)

(1) Unit 1, FNP-1-STP-608.0, Main Steam Safety Valve Operational Test, on April 5, 2018
(2) Unit 1, FNP-1-STP-40.0A, Safety Injection With Loss of Off-Site Power Test – A Train, on April, 27, 2018

In-service (1 Sample)

(1) Unit 2, FNP-2-STP-4.3, 2C Charging Pump Quarterly Inservice Test, Ver. 81.1 on April 19, 2018

Containment Isolation Valve (1 Sample)

(1) Unit 1, FNP-1-STP-627.0, Local Leak Rate Testing of Containment Penetrations, Ver. 49.0, for penetration #42

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

71124.02 - Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

Radiological Work Planning (1 Sample)

The inspectors evaluated the licensee's radiological work planning by reviewing the following activities:

(1) Reactor Cavity Transfer Canal Work, RWP No. 18-1467
(2) Reactor Coolant Pump Work, RWP No. 18-1456
(3) Reactor Head Disassembly / Assembly, RWP No. 18-1461
(4) Reactor Head Inspection, RWP No. 18-1706

Verification of Dose Estimates and Exposure Tracking Systems (1 Sample)

The inspectors evaluated dose estimates and exposure tracking.

Implementation of ALARA and Radiological Work Controls (1 Sample)

The inspectors reviewed ALARA practices and radiological work controls by reviewing the following activities:

(1) Reactor Cavity Transfer Canal Work, RWP No. 18-1467
(2) Reactor Coolant Pump Work, RWP No. 18-1456
(3) Reactor Head Disassembly / Assembly, RWP No. 18-1461
(4) Reactor Head Inspection, RWP No. 18-1706

Radiation Worker Performance (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Engineering Controls (1 Sample)

The inspectors evaluated airborne controls and monitoring.

Use of Respiratory Protection Devices (1 Sample)

The inspectors evaluated respiratory protection.

Self-Contained Breathing Apparatus for Emergency Use (1 Sample)

The inspectors evaluated the licensee's self-contained breathing apparatus program.

71124.04 - Occupational Dose Assessment

Source Term Characterization (1 Sample)

The inspectors evaluated the licensee's source term characterization.

External Dosimetry (1 Sample)

The inspectors evaluated the licensee's external dosimetry program.

Internal Dosimetry (1 Sample)

The inspectors evaluated the licensee's internal dosimetry program.

Special Dosimetry Situations (1 Sample)

The inspectors evaluated the licensee's performance for special dosimetry situations.

71124.05 - Radiation Monitoring Instrumentation

Walkdowns and Observations (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

Calibration and Testing Program (1 Sample)

The inspectors evaluated the licensee's calibration and testing program.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below for the period from April 2017, through March 2018. (6 Samples)

(1) Mitigating system performance indicator (MSPI), residual heat removal systems, Units 1 and 2 (2 Samples)
(2) MSPI, cooling water systems, Units 1 and 2 (2 Samples)
(3) OR01: Occupational Exposure Control Effectiveness (1 Sample)
(4) PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences (1 Sample)

71152 - Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue. The inspectors reviewed the details of condition report (CR) 10488366, Trend CR – Charging Pump Discharge Check Valve Failures.

Annual Follow-up of Selected Issues (1 Sample)

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

(1) Condition Report 10475560, Failure of a Main Steam Isolation Valve on the 'C' Steam Line on Unit 1 on March 25, 2018

71153 - Follow-up of Events and Notices of Enforcement Discretion

Licensee Event Reports (2 Samples)

The inspectors evaluated the following licensee event reports which can be accessed at https://lersearch.inl.gov/LERSearchCriteria.aspx:

(1) Licensee Event Report (LER) 05000364/2017-005-00, Power Range Nuclear Instrument Inoperable Due to Poor Connection of High Voltage Cable Connector on June 19, 2018
(2) Licensee Event Report (LER) 05000364/2017-004-00, Turbine-Driven Auxiliary Feedwater Pump Steam Admission Valve Air Leak Resulted in a Condition Prohibited by Technical Specifications

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation

The inspectors evaluated the licensee's independent spent fuel storage installation cask loadings on June 28, 2018.

INSPECTION RESULTS

Licensee Identified Non-Cited Violation	71111.15- Operability Determinations and Functionality Assessments
This violation of very low safety significance was identified by the licensee, has been entered into the licensee corrective action program and is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: 10 CFR 50, Appendix B, Criterion XI, Test Control, required in part, a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in all applicable design documents. Contrary to the above, the Unit 1 pressurizer power operated relief valve (PORV) PCV-445A was not set up properly for testing and the written test procedures did not incorporate the acceptance limits in all applicable design documents. Specifically, the open and closed limit switches were not set up properly which would result in shorter stroke times during testing per licensee procedure FNP-1-STP-45.11, "Miscellaneous Cold Shutdown Valves Inservice Test". Additionally, licensee procedure FNP-1-STP-201.28, "Pressurizer Power Operated Relief Valves Position Indication and Relay Logic Contact Verification Q1B31PCV0444B and Q1B31PCV0445A," Ver. 14, allowed a minimum stroke length of 0.5 inches while a vendor evaluation in Request for Engineering Review (RER) 941414 stated a minimum stroke length of 0.56 inches was required. Significance/Severity Level: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At Power. The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for more than 24 hours. This inspectors determined that this issue could have impacted the ability to identify valve degradation during testing and would not have impacted the ability of the valve to fulfill its safety function. Corrective Action Reference(s): The issue was placed in the licensee's CAP as condition report (CR) 10485637. Procedure FNP-1-STP-201.28 revised the minimum stroke length for PCV-445A to 0.56 inches and PORV PCV-445A limit switches were adjusted properly.	

Licensee Identified Non-Cited Violation	71153 (1) - Follow-up of Events and Notices of Enforcement Discretion
This violation of very low safety significance was identified by the licensee, has been entered into the licensee corrective action program and is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.	

Violation: Technical Specifications (TS) Limiting Condition of Operability (LCO) 3.3.1, Reactor Trip System (RTS) Instrumentation, required the RTS instrumentation for each Function in Table 3.3.1-1 to be operable. The over temperature delta-T (OTΔT) function listed in Table 3.3.1-1 required 3 channels to be operable in Modes 1 and 2. With one channel inoperable, the required actions of Condition E of LCO 3.3.1 are required to be performed within the completion time. LCO 3.0.3 required in part, when an LCO is not met and the associated actions are not met, an associated action is not provided, or if directed by the associated actions, the unit shall be placed in a mode or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: Mode 3 within 7 hours; Mode 4 within 13 hours; and Mode 5 within 37 hours.

Contrary to the above, since Unit 2 entered Mode 2 on Nov. 12, 2017, at 1138 with two channels of the OTΔT function inoperable until Nov. 13, 2017, at 0115 when one channel of the OTΔT function was restored, the licensee failed to place Unit 2 in Mode 3 within 7 hours and then Mode 4 within 13 hours as required by LCO 3.0.3. The time the two channels of the OTΔT function was inoperable totaled 13 hours and 37 minutes. LCO 3.3.1 does not provide an associated action with two channels of the OTΔT function inoperable in Modes 1 and 2. The OTΔT trip function is provided to ensure that the design limit departure from nucleate boiling ratio (DNBR) is met. The inputs to the OTΔT trip include pressure, coolant temperature, axial power distribution and reactor power as indicated by loop delta temperatures at full reactor coolant flow. Power range channel NI-42 provided the channel 2 input and pressurizer pressure instrument PT-457 provided the channel 3 input into the OTΔT function. PT-457 was declared inoperable on Nov. 11, 2017, at 0522 and NI-42 was declared inoperable on Nov. 13, 2017, at 0136. Because NI-42 was found with a degraded center pin on high voltage cable connector, it was determined to be inoperable since Nov. 10, 2017. As a result, Unit 2 entered Mode 2 with two inoperable channels of OTΔT which is contrary to TS requirements.

Significance/Severity Level: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At Power. The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for more than 24 hours. The OTΔT safety function was maintained since one channel of the OTΔT function remained operable and the bistables for a second channel were placed in trip to comply with the TS action statement.

Corrective Action Reference(s): The issue was placed in the licensee’s CAP as condition report (CR) 10429911 and reported to the NRC in LER 05000364/2017-005-00.

Licensee Identified Non-Cited Violation	71153(2) - Follow-up of Events and Notices of Enforcement Discretion
This violation of very low safety significance was identified by the licensee, has been entered into the licensee corrective action program and is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.	

Violation: Farley Nuclear Plant Unit 2 Technical Specifications (TS) limiting condition for operation (LCO) 3.7.5, "Auxiliary Feedwater System," required all three auxiliary feedwater (AFW) trains shall be operable in modes 1, 2, and 3. For Condition "A", one steam supply to turbine driven AFW pump inoperable, the required action A.1 was to restore the affected equipment to operable status within the required completion time of 7 days. If the required action and associated completion time is not met, action statement, Condition "C" required that the unit be in mode 3 within 6 hours and mode 4 within 12 hours. TS Surveillance Requirement (SR) 3.7.5.5 required verification that the turbine driven AFW pump steam admission valves open when air is supplied from their respective air accumulators.

Contrary to the above, the licensee determined the steam admission valve (Q2N12HV3235B) was inoperable longer than the required action completion time of 7 days between May 6, 2016 and October 15, 2017, while Unit 2 was in modes 1, 2, and 3. Unit 2 was not placed in mode 3 or 4 as required by condition "C" of TS LCO 3.7.5. On October 31, 2017, a turbine-driven auxiliary feedwater (TDAFW) pump steam admission valve (Q2N12HV3235B) was tested with a flow scan analysis device during a refueling outage, while the plant was in Mode 6. This valve is the B-train steam admission valve that supplies steam to the TDAFW pump from the '2C' steam generator. There is a redundant A-train steam admission valve that supplies steam from the '2B' steam generator. During valve flow scan testing of the valve actuator it was discovered that air was leaking past the actuator piston o-ring seal inside the valve air actuator. Air leakage was measured greater than 10 psig per minute which was significant enough that the valve would not meet surveillance requirement (SR) 3.7.5.5 when instrument air was supplied solely from the valve's associated air accumulator. Although the valve would stroke open with air supplied only from the accumulator, the SR 2-hour acceptance criteria to maintain the valve open could not be met. Each steam admission valve has an air accumulator associated with it. The air accumulator is designed to provide a sufficient quantity of air to ensure operation of the valve during a loss of power event or other failure of the normal instrument air supply for a period of two hours. Also, the inspectors determined that the licensee missed an opportunity to determine the cause of the o-ring failure since the o-ring was discarded during actuator rework. Procedure NMP-ES-001, Equipment Reliability Process Description, requires the preservation of physical evidence when failures occur.

Significance/Severity Level: The inspectors assessed the significance of this finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for findings at Power," dated June 19, 2012. The finding screened to green (very low safety significance) because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for more than 24 hours. The function of the TDAFW pump was maintained by preserving the operability of the A-train steam supply to the TDAFW pump.

Corrective Action Reference(s): The issue was placed in the licensee's CAP as condition report (CR) 10425739. This degraded condition was identified on October 31, 2017 and reported to the NRC in Licensee Event Report (LER) 050000364/2017-004-00. The valve air actuator was rebuilt under WO SNC798621 and satisfactorily tested on November 5, 2017.

High vibrations on the '1B' Charging pump			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-01 Open/Closed	H.1 - Resources	71111.12 - Maintenance Effectiveness

A green self-revealed NCV of TS 5.4.1, "Procedures" was identified for the failure to provide adequate work order (WO) instructions in work order SNC531734 for the '1B' charging pump preventive maintenance on January 31, 2017. Excess grease was added to the pump shaft coupling which resulted in vibration amplitude above the required action range on the pump outboard bearing during a surveillance test on April 28, 2018.

Description:

On April 28, 2018, during performance of FNP-1-STP-4.11, "Charging Pump Biennial Comprehensive Inservice Test", the '1B' charging pump vibration amplitude exceeded the required action range at high flow on the pump outboard bearing in the horizontal direction. The plant was in Mode 5 during the 1R28 refueling outage, at the time of the test, and the pump was not required to be operable. While operating at approximately 615 gallons per minute (gpm), the pump outboard bearing horizontal vibration amplitude measured 0.783 inches per second peak (ips pk), above the 0.58 ips pk required action level, per the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). The other 15 vibration measurement locations on the pump, speed increaser, and motor were acceptable since the measured vibration amplitudes were below the "required action" range. The '1B' charging pump has been on increased frequency vibration monitoring for quarterly surveillance testing since April 2017. The increased vibration amplitude was first identified during performance of FNP-1-STP-4.2, "1B Charging Pump Quarterly In-Service Test" when it was determined that pump vibration amplitude was measured in the alert range, while the pump was operating at approximately 138 gpm. Vibration amplitude levels on the outboard bearing in the horizontal and vertical directions slowly decreased with performance of each quarterly surveillance test after April 2017, until the vibration decreased below the 0.325 ips pk alert level in March 2018, just prior to the 1R28 refueling outage.

The licensee determined the most likely cause of the high vibration amplitude on the pump outboard bearing was due to excessive grease applied to the pump coupling during work order SNC531734, conducted on January 31, 2017. The licensee stated that an unbalance force at the coupling tends to cause an increase in pump outboard bearing horizontal vibration amplitude due to the proximity of a yawing mode to pump operating speed. Following initial full flow testing of the '1B' charging pump on April 28, 2018, WO SNC859023 disassembled the pump side coupling and removed approximately 8 ounces of excess grease. During the inspection and disassembly of the coupling, excess grease was discovered in both hubs. The licensee cleaned up the hubs and re-greased the coupling hubs using an acceptable amount of grease, and rotated the coupling shafts to place the shaft keys 180 degrees apart. Following the reassembly of the coupling, a full flow retest was performed on April 28, 2018, and the measured vibration amplitude on the outboard bearing reduced significantly; however, the pump outboard vertical vibration amplitude remained above the alert/alarm threshold. A balance move was calculated and installed to reduce the outboard pump vibration levels below the alert/alarm threshold. An additional mass of 9.6 grams was added to the 0 degree reference (in-line with laser tape and pump

side shaft key) at the outboard #1 collar set screw under work order SNC941552. Following the implementation of the above corrective actions, the 1B charging pump post-maintenance testing on April 29, 2018, was satisfactory. Quarterly surveillance testing of the 1B Charging Pump on June 15, 2018, after the refueling outage with a flow rate of 138 gpm, resulted in measured vibration amplitudes on the pump outboard bearing at levels approximately the same as before the preventive maintenance on the pump coupling on January 31, 2017. Based on assessments and analysis by licensee personnel with substantial experience in rotating machinery diagnostics, the licensee determined that the high vibration amplitude on the pump outboard bearing, discovered on April 28, 2018, while operating at approximately 615 gpm flow rate, would not challenge the ability of the pump to perform its design function for 30 days.

Corrective Action(s): The licensee removed excess grease from the coupling, rotated the coupling shafts to place the shaft keys 180 degrees apart, cleaned the hubs and re-greased the coupling hubs using the proper amount of grease.

Corrective Action Reference(s): Condition Reports (CRs) 10324970, 10487214, 10355785

Performance Assessment:

Performance Deficiency: Failure to provide adequate work order (WO) instructions in work order SNC531734 which resulted in adding excessive grease to the pump coupling on February 1, 2017, was the performance deficiency. Excess grease in the pump shaft coupling resulted in vibration amplitude which exceeded the required action range at high flow rates on the pump outboard bearing in the horizontal direction, per the ASME OM code.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Finding At Power”. The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for more than 24 hours. The inspectors reviewed the “Plant Farley 1B Charging Pump Functionality Review” that stated that the high vibrations did not challenge the ability of the 1B charging pump to perform its safety function for 30 days. Also, following the implementation of the corrective actions the 1B charging pump passed the post maintenance vibration testing.

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of Resources in the Human Performance area because individuals involved with the lubrication of the ‘1B’ charging pump coupling did not have adequate instructions in the work order. The lack of adequate instructions allowed the maintenance journeymen to add excessive grease to the pump hubs. This caused the pump vibration amplitude to exceed the required action range at high flow rate on the pump outboard bearing in the horizontal direction. [H.1]

Enforcement:

Violation: Technical Specifications 5.4.1.a, “Procedures” required in part, written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Rev. 2, Appendix A, Feb. 1978. Section 9.a of Appendix A of Regulatory Guide 1.33 required in part, maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, the ‘1B’ charging pump coupling work order SNC531734 was performed on January 31, 2017, with no guidance on how much grease to apply to the pump coupling hubs. This resulted in the maintenance journeymen adding excessive grease to the coupling hubs which caused pump outboard bearing vibration amplitude (horizontal) in the required action range. The plant was in Mode 5 during the 1R28 refueling outage, at the time of the test, and the pump was not required to be operable.

Disposition: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to develop adequate preventive maintenance for diesel generator relays			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-02 Open/Closed	P.3 Resolution	71111.19- Post Maintenance Testing

A green self-revealed violation of Technical Specifications 5.4.1, “Procedures” was identified on May 16, 2018 when the 1B diesel generator (DG) failed to adequately load during a subsequent restart while performing FNP-1-STP-80.6, “Diesel Generator 1B 24 Hour Load Test”, Ver. 34.1. The licensee later determined that normally closed contacts on relay K3 associated with the field flashing circuit had high resistance which prevented proper field flashing of the diesel generator and resulted in 1B DG inoperability.

Description:

A preventive maintenance (PM) task to test and inspect the associated relays (K1 through K4) for the diesel generators was last performed in 2010. This PM task was inactivated in December 2014 under preventive maintenance change request (PMCR) 78021 because the licensee determined it was not needed or recommended for these relays. During discussions with plant staff following this event, the PM task was cancelled under the expectation that the K1 through K4 relays would be replaced via a design change before the next due date of the PM task. According to corrective action report (CAR) 261105, on March 5, 2014, the plant health committee (PHC) approved a design change to replace all K1 through K4 relays on all five Farley diesel generators during 2016 and 2017. An equivalency determination was developed for the ‘1B’ DG K3 relay with plans to replace this relay in 2018. However, the degraded relay adversely impacted the performance of the ‘1B’ DG before the relay was replaced. According to the licensee, the ‘1B’ DG K3 relay has been installed since original plant construction.

Following the inactivation of the PM associated with these relays, another PM task was not developed for these relays contrary to the guidance in section 4.4 of licensee procedure

NMP-ES-001, “Equipment Reliability Process Description”, Ver. 9.3. Because an applicable PM template existed for control relays, the licensee should have selected an adequate PM task, established the frequency and documented the bases for the PM. The PM template included functional testing, inspection and cleaning, and replacement.

Corrective Action(s): Upon discovery of the issue, the ‘1B’ DG K3 relay was replaced with a new relay from a different manufacturer and was tested satisfactorily on May 18, 2018. A bridging strategy is also being developed until the K1 through K4 relays design changes can be implemented.

Corrective Action Reference(s): This issue was placed in the licensee’s corrective action program (CAP) as condition report (CR) 10493987.

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to assign a preventive maintenance task for the ‘1B’ DG K3 relay as required by licensee procedure NMP-ES-001, “Equipment Reliability Process Description”, section 4.4 was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely impacted the equipment performance attribute of the mitigating systems cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to establish an adequate PM task for the ‘1B’ K3 relay resulted in degraded relay contacts which impacted the field flashing circuit, which prevented the ‘1B’ DG from successfully completing a required surveillance test, FNP-1-STP-80.6, “Diesel Generator 1B 24 Hour Load Test”.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At Power.” The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for more than 24 hours. Before this event, the ‘1B’ DG successfully started and loaded on May 15, 2018 and the associated technical specification action statement completion time was 10 (ten) days. As a result of this issue, the ‘1B’ DG was inoperable for less than 2 days.

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of Resolution in the Problem Identification and Resolution (PI&R) area because the Farley organization did not take effective correction action to either replace the DG relay with a design change or establish an adequate PM task in a timely manner. [P.3].

Enforcement:

Violation: Technical Specifications 5.4.1.a, “Procedures” required in part, written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Rev. 2, Appendix A, Feb. 1978. Section 9.b of Appendix A of Regulatory Guide 1.33 required in part, preventive maintenance should be developed to specify inspections of equipment, replacement of items and inspection or replacements of parts that have a specific lifetime. Licensee procedure NMP-ES-001,

"Equipment Reliability Process Description," section 4.4 required the licensee to select the PM task(s), establish PM frequency and document the bases for equipment with an applicable PM template. Contrary to the above, since approval of preventive maintenance change request 78021 in 2014, the '1B' diesel generator K3 relay did not have any PM tasks assigned. As a result, contacts associated with this relay degraded, which impacted the function of the DG field flashing circuit, which resulted in the '1B' DG inoperability on May 16, 2018.

Disposition: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Calibrate Portable Radiation Survey Instruments			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000348, 364/ 2018002-03 Opened/Closed	H.1 – Resources	71124.05 - Radiation Monitoring Instrumentation

A NRC-identified, green, NCV of 10 CFR 20.1501(c) was identified for the licensee's failure to periodically calibrate portable instruments for the radiation measured. Specifically, high-range Geiger-Mueller (GM) survey instruments were not being calibrated for use above 300 R/hr.

Description:

During a demonstration of portable RP instrument calibration techniques and subsequent discussion with instrument maintenance technicians, the inspectors determined that the Cesium-137 sources used for calibration could only achieve a maximum dose rate of 225 R/hr due to radiological decay. According to vendor manuals and licensee procedures, certain high-range GM survey meters require multiple calibration points with the highest being between 500 R/hr and 700 R/hr. Because the Cs-137 sources were not of sufficient strength to adequately calibrate the meters on the highest range, these devices should have been limited in service to dose rates less than approximately 300 R/hr. However, through a review of survey records over the past five years, the inspectors discovered that high-range GM survey instruments had been used to measure dose rates greater than 300 R/hr on two occasions. Specifically, on 10/16/15 and 8/25/16, the licensee performed underwater surveys of activated components where dose rates of 533 R/hr and 527 R/hr were measured. The inspectors also noted that, on two other occasions, high-range GM instruments had been used to provide job coverage during evolutions (core barrel pull) with the substantial potential for dose rates to exceed 300 R/hr. However, in each case, the dose rates did not reach those levels.

Corrective Action(s): The licensee implemented immediate corrective actions including procurement of properly calibrated GM instruments from another Southern Company site.

Corrective Action Reference(s): Condition Report (CR) 10482637

Performance Assessment:

Performance Deficiency: The licensee's failure to calibrate GM survey instruments for the radiation measured, as required by 10 CFR 20, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor

because, if left uncorrected, it had the potential to lead to a more significant safety concern. For example, portable survey instruments that had not been calibrated periodically for the radiation measured in very high dose rate fields could provide inaccurate readings during job coverage and lead to unplanned worker dose.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609 C, "Occupational Radiation Safety Significance Determination Process". The finding was not related to As Low As Reasonably Achievable (ALARA) planning, nor did it involve an overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross-cutting Aspect: This finding involved the cross-cutting aspect of Human Performance, Resources, because the event was a direct result of the licensee's failure to provide adequate equipment to perform calibrations of portable survey instruments. [H.1].

Enforcement:

Violation: 10 CFR 20.1501(c) requires that instruments used for quantitative radiation measurements (e.g., dose rates) be calibrated periodically for the radiation measured. Contrary to this, on 10/16/15 and 8/25/16, the licensee made quantitative radiation measurements with instruments that had not been calibrated for the radiation measured. Upon identification, the licensee immediately procured properly calibrated GM survey instruments from another Southern Company site.

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

Failure to implement timely corrective actions for charging pump discharge check valves			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348,364/2018002-04 Open/Closed	H.10 – Bases for Decisions	71152 - Problem Identification and Resolution

A green self-revealed NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" was identified for the licensee's failure to promptly identify and correct a condition adverse to quality associated with the Unit 1 and 2 charging pump discharge check valves. Specifically, on July 30, 2014, condition report 846971 documented a green NCV due to inadequate acceptance criteria for testing check valves. The corrective actions to revise the acceptance criteria for these check valves were not implemented promptly. As a result, the licensee missed an opportunity to identify degradation of the check valves until April 2018, when the Unit 1 'A' and 'C' and the Unit 2 'C' charging pump discharge check valves did not pass their surveillance tests when tested using the updated acceptance criteria.

Description:

As a result of NCV 2014007-05, "Inadequate Acceptance Criteria for Testing of Check Valves" the licensee completed an apparent cause determination report (CAR 211522) and developed corrective actions to evaluate use of volumetric flow testing for the charging pump discharge check valves. On July 20, 2015, Technical Evaluation (TE) 880587 concluded that volumetric flow testing using an ultrasonic flow meter is a feasible and preferred method

because it would provide quantifiable results. According to revision 2 of CAR 211522, TE 880587 also required a change to the check valves IST methodology that incorporates a reverse flow measurement for the charging pump discharge check valves. It had an initial due date of April 15, 2015. The due dates for completion of the assigned actions listed in TE 880587 were extended three times and on July 20, 2015, the actions of TE 880587 were split into two separate TEs. TE 928990 became the corrective action document that was to ensure the procedures were updated to reflect the reverse flow testing method of the check valves. According to plant records, it had an initial due date of Nov. 19, 2015, but was extended three times until April 28, 2017. In July of 2016, the licensee initiated CR 10254467 to update the surveillance procedures to test the charging pump discharge check valves using an ultrasonic flow meter. In December 2016, a Westinghouse evaluation documented the discharge check valve leakage acceptance criteria. The surveillance procedures used to test the charging pump discharge check valves' capability to prevent reverse flow using the new method were updated in May 2017. However, the procedure's acceptance criteria was not updated to include the new method. Also, the step in the procedure that would have tested the check valves using the new method implied it was optional. It stated in part, "IF Appendix 3 (Step 5.2) to be performed…" Appendix 3 was the new method that would have quantified any leakage through the charging pump discharge check valves.

On January 30, 2018, the 2B charging pump discharge check valve tested unsatisfactory using a previous methodology, a pressure change over a specific time. Following the failure of the 2B charging pump discharge check valve on January 30, 2018, the licensee determined that the pressure change test was not an acceptable way to test these check valves. CR 10463922 was written on Feb. 20, 2018, to incorporate the new volumetric flow testing method to test the check valves and remove the reference to the previous method of testing.

On April 13, 2018, the Unit 1 'A' and 'C' charging pump discharge check valves were tested using the volumetric flow testing methodology and did not meet the acceptance criteria. On April 18, 2018, the Unit 2, 'C' charging pump discharge test valve was also tested using the volumetric flow testing methodology and did not meet the acceptance criteria. The inspectors determined that the licensee did not promptly establish adequate acceptance criteria for testing the Unit 1 and 2 charging pump discharge check valves following the NCV received in 2014.

The testing methodology and associated acceptance criteria from 2014 would not allow the licensee to trend degradation of these check valves, but would only be indicative of gross reverse leakage that could impact performance of high head safety injection (HHSI) flow. The inspectors concluded that this was a missed opportunity to identify degradation of these check valves to prevent any adverse impact to the HHSI function. Additionally, it was determined that these check valves were categorized a category 'C' valves in the IST program, but should have been considered as 'A/C' valves since the leakage through the check valves can impact HHSI flow rates. The inspectors determined that this also should have been evaluated and corrected in 2014 (possibly earlier) and is considered a contributor to this issue.

Corrective Action(s): The check valves were replaced with new check valves and post maintenance testing completed satisfactorily.

Corrective Action Reference(s): Condition Reports (CRs) 10485477, 10488366

Performance Assessment:

Performance Deficiency: Failure to implement timely corrective actions to establish adequate acceptance criteria for testing the charging pump discharge check valves was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Finding At Power. The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for more than 24 hours. The inspectors reviewed a licensee evaluation (CAR 274123) that stated the as-found leakage through the failed check valves would not have impacted the HHSI safety function.

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of Bases for Decisions in the Human Performance area because licensee personnel did not recognize or adequately communicate the potential impact of excessive reverse flow through these check valves on the HHSI safety function. As a result, the corrective action due date extensions were approved without an adequate basis. [H.10].

Enforcement:

Violation: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions" required in part, measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, from Sept. 10, 2014 until May, 2018, the licensee failed to promptly identify and correct a condition adverse to quality associated with the Unit 1 and 2 charging pump discharge check valves. Specifically, following an NRC-identified non-cited violation in 2014, the licensee's corrective actions to develop adequate acceptance criteria for testing these check valves were not promptly implemented. As a result, the licensee missed an opportunity to identify degradation of these check valves until April 2018 when the Unit 1 'A' and 'C' and the Unit 2 'C' charging pump discharge check valves did not pass their surveillance tests when tested using updated acceptance criteria.

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

Failure of a Main Steam Isolation Valve on the 'C' Steam Line			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000348/2018002-05 Open/Closed	H.1 - Resources	71152 - Problem Identification and Resolution

A green self-revealed NCV of Technical Specifications 5.4.1, "Procedures" was identified for the failure of the licensee to provide adequate procedural guidance in FNP-0-MP-39.0, "Main Steam Isolation Valve Disassembly and Reassembly" to maintenance personnel for assembling the main steam isolation valve (MSIV) disc arm to the disc. As a result, MSIV 3370C failed, which resulted in partial blockage of the 'C' steam line on March 25, 2018, while the plant was operating at approximately full rated power. The valve disc in the swing-type MSIV separated from the disc arm and fell into the steam flow path. Specifically, the four bolts holding the disc to the arm broke, due to disc to disc arm fluttering, as a result of improper assembly.

Description:

On March 25, 2018, Unit 1 experienced a secondary system transient on steam line flow and feedwater flow, steam generator pressure, and steam generator level. Steam line flow and feedwater flow for the 'C' steam generator decreased slightly, while steam generator pressure increased. Steam generator level dropped then returned to normal level based on the automatic control system operation. Control room operators determined the most likely cause of these indications was steam line blockage. The reactor was shut down in a controlled manner, the turbine was taken off line, and the reactor coolant system was cooled to Mode 4 conditions. Each of six MSIVs were cycled and all appeared to operate normally, with the exception of the downstream valve on the 'C' steam line, MSIV 3370C, which would not cycle closed. Two in-series air-operated, swing-type, MSIVs are provided in each of the three main steam lines outside of containment and provide main steam line isolation in the event of a Loss of Coolant Accident (LOCA) or main steam line break to prevent main steam depressurization and the loss of steam generator pressure and inventory, thereby affecting reactor cooldown. Upon disassembly of MSIV 3370C, the licensee discovered that the valve disc had separated from the disc arm and the disc had fallen into the valve body in a manner that wedged the disc arm in the full-open position. The licensee procedure referenced use of vendor instructions which stated the torque value of the four disc nuts must be a minimum of 10 inch-pounds (in-lbs). However, vendor representatives (Weir) confirmed that the minimum torque of the four disc nuts required to achieve proper compression of the Belleville washers was 10 ft-lbs.

Corrective Action(s): All MSIV 3370C internal valve components and the valve shaft were replaced under OEM vendor supervision in accordance with vendor instructions and post maintenance testing was conducted satisfactorily on April 2, 2018. The upstream MSIV 3369C was opened and inspected during RFO 1R28 and found to be acceptable. MSIV 3370A & B were also inspected and reworked as necessary by the valve manufacturer representatives. Documents associated with the most recent inspections on all three Unit 1 upstream MSIVs (MSIV 3369A, B & C) and all six Unit 2 MSIVs revealed all 9 valves were properly inspected by the valve manufacturer representatives during recent refueling outages.

Corrective Action Reference(s): Condition Reports (CRs) 10475560, 10475967

Performance Assessment:

Performance Deficiency: Failure to provide adequate procedural guidance in FNP-0-MP-39.0, "Main Steam Isolation Valve Disassembly and Reassembly" as it related to establishing proper compression and torque on the disc arm to disc bolting to achieve the needed Belleville washer compression was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Finding At Power". The finding screened to green (very low safety significance), because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component (SSC); did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single Train for more than its technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for more than 24 hours. The upstream MSIV, 3369C remained operable and available to fulfill the 'C' main steam line isolation function.

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of Resources in the Human Performance area because individuals involved in previous inspections of the MSIVs followed inadequate procedural guidance as it related to establishing or ensuring proper compression and torque on the disc arm to disc bolting to achieve the needed Belleville washer compression. This looseness allowed significant valve disc to disc arm chatter which led to failure of the bolted connections during Mode 1 power operations. [H.1]

Enforcement:

Violation: Technical Specifications 5.4.1.a, "Procedures" required in part, written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Rev. 2, Appendix A, Feb. 1978. Section 9.a of Appendix A of Regulatory Guide 1.33 required in part, maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to these requirements, since 2012, when work was last performed on MSIV 3370C using work order SNC65840, the licensee failed to provide adequate procedural guidance in FNP-0-MP-39.0, "Main Steam Isolation Valve Disassembly and Reassembly", to maintenance personnel for assembling the MSIV disc arm to the disc.

Disposition: 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.

The inspectors confirmed that any proprietary information was controlled to protect from public disclosure.

- On April 13, May 11, and July 17, 2018, the inspectors presented the in-service activities, radiological protection, and quarterly baseline inspection results, respectively to Dennis Madison, and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01: Adverse Weather Protection

Procedures:

FNP-0-AOP-21, Severe Weather, Rev. 46.1
NMP-OS-017, Severe Weather, Ver. 1.1
NMP-AD-014, Requirements for Compliance with NERC Standards, Ver. 6.1
NMP-AD-014-GL01, Guidelines for Compliance with NERC Standards, Ver. 6
FNP-1-UOP-1.2, Startup of Unit from Hot Standby to Minimum Load, Ver. 116
NMP-GM-021, Switchyard Access and Maintenance Controls, Ver. 6
FNP-1-AOP-5.2, Degraded Grid, Ver. 16.1

Condition Reports:

10497213, 10497379, 10497995, 10497382

Documents:

NUC-001, Nuclear Plant Interface Coordination for Southern Nuclear Operating Company, Ver. 2

71111.04: Equipment Alignment

Drawings:

D-175038, Unit 1 P&ID – Safety Injection System, Sheet 1, Ver. 44
D-175038, Unit 1 P&ID – Safety Injection System (Containment Spray), Sheet 3, Ver. 27
D205007, Unit 2 P&ID – Auxiliary Feedwater System, Ver. 29

Procedures:

FNP-1-SOP-9.0A, Containment Spray System, Ver. 9.0
FNP-0-SOP-38.0C, 1C Diesel Generator, Ver. 14
FNP-0-SOP-38.0-1C, 1C Diesel Generator and Auxiliaries, Ver. 16.1
FNP-2-SOP-22.0A, Auxiliary Feedwater System, Ver. 14

Condition Reports:

10494607

71111.05: Fire Protection Annual/Quarterly

Drawings:

D513638, Unit No. 1 – Fire Barriers and Fire Boundaries – U1 Auxiliary Building and Containment El. 100’ & 105’, Ver. 1.0

Documents:

A-181805, NFPA 805 Fire Protection Program Design Basis Document, Ver. 4.0
WO SNC803061, FNP-1-FSP-63.17, Visual Inspection of Penetration Fire Barriers (Auxiliary Building: Penetration Filtration Room, Charging Pump Area, Penetration Room, Hallway, and Waste Gas Areas), Ver. 13.1
WO SNC827756, FNP-1-FSP-63.17A, Visual Inspection of Penetration Fire Barriers (Auxiliary Building: Penetration Filtration Room, Charging Pump Area, Penetration Room, Hallway, and Waste Gas Areas), Ver. 3.1
WO SNC741175, FNP-1-FSP-63.18, Visual Inspection of Penetration Fire Barriers, Ver. 11.1
WO SNC881904, FNP-0-FSP-58.0, Fire Hose Stations, Ver. 12.0

WO SNC644350, FNP-1-FSP-207.0, Hose Station Flow and Valve Operability Test, Ver. 4.0
WO SNC776088, FNP-1-FSP-65.2A, Fire Doors Functional Inspection Auxiliary Building – Diesel Building – Service Water Building Train "A", Ver. 7.0
WO SNC779004, FNP-1-FSP-65.2, Fire Doors Functional Inspection Auxiliary Building – Diesel Building – Service Water Building (Non Train Related), Ver. 16.1
WO SNC666764, FNP-1-FSP-307.0, Smoke Detectors – Biennial Operability and Adjustment, Ver. 23.1
WO SNC539087, FNP-1-FSP-405.0, Preaction Sprinkler System (Annual), Ver. 16.0

Procedures:
FNP-1-FPP-1.0, Unit 1 Auxiliary Building Pre-Fire Plan, Ver. 1.0
FNP-0-UOP-4.0, General Outage Operations Guidance, Ver. 59

Condition Reports:
10481023, 10486663, 10491557

71111.08, Inservice Inspection Activities
Procedures
FNP-0-ETP-019.0, Leakage Assessment Program, Version 2.0
FNP-1-STP-156.2, Class 1 Piping Inservice Pressure Testing, Version 8.0
NMP-ES-019, Boric Acid Corrosion Control Program, Version 11.1
NMP-ES-019-001, Boric Acid Corrosion Control Program Implementation, Version 11.1
NMP-ES-019-003, Boric Acid Deposit Sampling, Analysis and Data Evaluation, Version 2.1
NMP-ES-019-004, Boric Acid Corrosion Control Program - Corrosion Assessment, Version 5.1
NMP-MA-013, Leak Management Program, Version 14.1

Licensee Initiated Corrective Action Documents
Condition Reports
CR10277596, Through-Wall Leak on SW Piping
CR 10414704, Through-Wall Leak on U1 A-Train SW Strainer Backwash Line
CR 10418785, Wall Thickness below 90% of Nominal Detected in License Renewal UT Exam of SW Piping on WO SNC842161
CR 10427797, Piping Thru-Wall Leak
CR 10476125, The 1A RCP pump has minor to moderate boric acid stemming from the seal area of the pump
CR 10476127, There is boric acid on one of the cables connected to the RCP
CR 10476132, In the 1C RCP Cubicle, Q1B13V091B was found with moderate boric acid accumulation coming from the pipe cap area of the valve
CR 10476576, On the 105' elevation in the area outside the missile barrier near the B SG area entrance, Q1B21FT0425 was found with moderate, dry, discolored boric acid accumulation
CR 10476626, Moderate to heavy, dry boric acid accumulation was found coming from the pipe cap area of the kero test valve
CR 10476862, Moderate, dry boric acid was found coming from the packing area of Q1E21V0244
CR 10480872, White Residue in Containment Sump

Corrosion Assessments
1B13-2015-003, dated 04/22/2018 (associated with CR 10476127)
1B13-2018-001, dated 04/24/2018 (associated with CR 10476132)
1B21-2018-002, dated 04/22/2018 (associated with CR 10476576)

1B41-2018-001, dated 04/22/2018 (associated with CR 10476125)
1E11-2018-001, dated 4/19/2018 (associated with CR 10476626)
1E21-2018-002, dated 5/23/2018 (associated with CR 10476862)

Welding Documentation

Procedure Qualification Record B06, GTAW Manual, Revision 0
Procedure Qualification Record B025, GTAW Manual, Revision 0
Welder Continuity Logs for J. Campbell, W. Josey, C. Lee, H. Powell, J. D. Thompson, and J. E. Thompson
Welder Process Qualification Report for J. Campbell, W. Josey, C. Lee, H. Powell, J. D. Thompson, and J. E. Thompson
Welding Procedure Specification 1.20N, GTAW/Manual, Revision 3
Welding Procedure Specification 8.20N, GTAW/Manual, Revision 6
Welding Procedure Specification 8.24N, GTAW/Manual, Revision 1

Other Documents

Certificate of Compliance for Calibration Test Block for Special Angle Beam, serial number SAP 104874
Certificate of Calibration for IR Thermometer, serial number 20860826, Equipment Number 30007223, dated 8/1/2017
Framatome Document Number: 180-9284798-000, Farley 1R28 Bare Metal Visual Examination, NDE Services Final Report, dated 5/23/2018
Krautkramer Transducer Certification of Conformity, Product Code 113-242-591, Serial Number 010YLN, dated 1/21/2004
NDE Personnel Certification Records for D. Arnaud, M. Riccardelli, and S. Overly
NMP-GM-003-F19, Boric Acid Corrosion Control Program (BACCP), Version 1.0
Report Number S18F1U001, Ultrasonic Examination of ALA2-4150-17-RB, Pipe to Elbow Weld on RHR Piping
Report Number S18F1U002, Ultrasonic Examination of ALA2-4150-18-RB, Elbow to Pipe Weld on RHR Piping
Report Number S18F1U003, Ultrasonic Examination of ALA2-4150-19-RB, Pipe to Pipe Weld on RHR Piping
Report Number S18F1V039, Visual Examination of ALA1-4102-SI-R118, Hydraulic Snubber on Safety Injection Piping
Magnetic Particle Examinations of Welds 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,18, 20, 23, and 24 of the Service Water Backwash Piping Line per Work Order SNC899664.
Visual Examination of ALA1-1100C, Reactor Pressure Vessel BMI/System Leakage
Visual Examination (VT-2) of Q1G31V017 (Welds 2FA and 3F) – Spent Fuel Pool Cooling Loop Return Drain per Work Order SNC821074 to comply with December 6, 2016, letter from NRC
Visual Examination (VT-2) of Welds 2F, 5F, and 6F – Service Water Strainer & Pump Motor Cooling Water Supply per Work Order SNC706842
Certificate of Certification for UT Couplant, Sonotrace 40, Batch Number: 16J043, dated 09/14/2016
Letter from NRC to Joseph M. Farley Nuclear Plant, Unit 1 - Alternative to Inservice Inspection Regarding Weld in Spent Fuel Pool Cooling System Drain Line (CAC NO. MF8465), dated December 6, 2016

71111.11: Licensed Operator Requalification Program

Documents:

MCR Logs, May 9, 2018

F-LT-SG-18-S0302, LOCT 16-18 Segment 18-3, Miscellaneous Malfunctions, May 13, 2018

Procedures:

FNP-1-UOP-1.2, Startup of Unit from Hot Standby to Minimum Load, Ver. 116

FNP-0-STP-101, Low Power Reactor Physics Testing, Ver. 1

NMP-TR-416, Licensed Operator Continuing Training Program Administration, Ver. 8

NMP-TR-416-001, Plant Farley License Operator Continuing Training Program Instruction, Ver. 9

71111.12: Maintenance Effectiveness

Documents:

CAR 273757

EVT-N12-2018-20569, Maintenance Rule Evaluation, May 9, 2018

Q1E21P002B, CBM Group Vibration Evaluation, May 1, 2018

Technical Evaluations (TE)

1008855, 979162, 1011091, 984175

Condition Reports:

10470270, 10473729, 10478730, 10491069, 10480020, 10324970, 10487214, 10355785, 10487439, 10487983, 10509101

Work Orders (WO)

SNC859023, SNC941552,

Procedures:

NMP-ES-027, Maintenance Rule Program, Ver. 7

71111.13: Maintenance Risk Assessments and Emergent Work Evaluation

Procedures:

NMP-OS-010-001, Farley Protected Equipment Logs, Ver. 15

NMP-GM-031-001, Online Maintenance Rule (a)(4) Risk Calculations, Ver. 5

Condition Reports:

10494563, 10499531, 10499534

Documents:

Unit 1 EOOS Operator's Risk Report for May 15, 2018

Unit 1 EOOS Operator's Risk Report for May 17, 2018

Unit 2 EOOS Operator's Risk Report for May 17, 2018

Unit 2 EOOS Operator's Risk Report for May 24, 2018

Unit 2 EOOS Operator's Risk Report for June 1, 2018

71111.15: Operability Determinations and Functionality Assessments

Drawings:

D-175041, Unit 1 P&ID – Residual Heat Removal System, Ver. 19

Documents:
WOs: SNC937577, SNC939545, SNC941412, SNC940629, SNC470085, SNC583767, SNC945489
Main Control Room Logs, May 3, 2018
Request for Engineering Review (RER) SNC941414
TE 1010276

Procedures:
FNP-0-EMP-1549.01, Agastat Pneumatic Time Delay Relay Replacement Program, Ver. 34.0
FNP-0-EMP-2543.05, General Electric Undervoltage Relays Type 12NGV13 Calibration, Ver. 13.1
FNP-1-STP-22.27, 1B Auxiliary Feedwater Pump Cold Shutdown Inservice Test & Preservice Test, Ver. 23.0
NMP-DP-001, Operator Risk Awareness, Ver. 15
NMP-OS-010-001, Farley Protected Equipment Logs, Ver. 15
NMP-OS-010, Protected Train/Division and Protected Equipment Program, Ver. 8
FNP-0-UOP-4.0, General Outage Operations Guidance, Ver. 59
FNP-1-STP-11.1, 1A RHR Pump Quarterly Inservice Test, Ver. 62.0
FNP-1-STP-11.2, 1B RHR Pump Quarterly Inservice Test, Ver. 63.0
FNP-1-STP-45.15, MS ARV and Emergency Air Compressor Cold Shutdown Test, Ver. 9.0

Condition Reports:
10480223, 10483556, 10489298, 10489242, 10485637, 10484805, 10488336, 10492209, 10492214, 10492662

71111.18: Plant Modifications
Drawings:
D514004, Unit 1 – Spent Fuel Pool Cooling System – G31 – Piping and Hanger Isometric, Rev. 1
D518515, Unit 1 – Spent Fuel Pool Cooling System – G31 – Piping Isometric – Aux. Bldg. El. 141'-6", Rev. 1

Procedures:
NMP-ES-084-001-F04, Design Change/Modification Impact Review Form, Ver. 3.3
NMP-ES-084-005, Temporary Configuration Change Process, Ver. 2.4
NMP-ES-084-005-F01, Temporary Configuration Change Form, Ver. 2.1
NMP-AD-008-F01, Applicability Determination, Ver. 11.1
NMP-AD-009, Licensing Document Change Requests, Ver. 13.3
ES-EP-003, 50.55a Evaluations, Ver. 2.0
NMP-ES-084-001-F16, Design Change/Modification – Engineering Review/Design Verification Form, Design WO SNC821047, Ver. 4.1
NMP-ES-035-006-F05, Fire Protection Program Impact Screen, Ver. 3.0
NMP-MA-029, Temporary Leak Repair of Piping and Components, Ver. 2.0

Documents:
WO SNC821047, SNC821066, SNC821074
NL-16-2204, Joseph M. Farley Nuclear Plant Unit 1 – Proposed Alternative FNP-ISI-ALT-21, Version 1.0, dated October 14, 2016 (ML16288A796)
NRC Safety Evaluation by the Office of Nuclear Reactor Regulation - Alternative FNP-ISI-ALT-21, Version 1.0, dated December 6, 2016 (ML16323A302)
NMP-AD-009-F01, Licensing Document Change Request (LDCR) No. 2016-049, Ver. 1.0
NMP-AD-008-F01, Applicability Determination, TCC/SNC821047, Ver. 1.0

NMP-AD-008-F01, Applicability Determination, SNC820801, Ver. 1.0
NMP-ES-035-006-F05, Fire Protection Program Impact Screen, TCC/SNC821047, Ver. 1.0
ES-EP-003, Alternative FNP-ISI-ALT-21, Version 1.0, 10 CFR 50.55a Evaluation, Ver. 2.0
NMP-ES-084-001-F04, Design Change/Modification Impact Review Form, TCC/SNC821047, Ver. 1.0
NMP-ES-084-001-F16, Design Change/Modification – Engineering Review/Design Verification Form, Design WO SNC821047, Ver. 1.0
FNP-0-GMP-40.0, System Leakage Test Data Sheet, dated October 27, 2016
NMP-ES-084-005-F01, Temporary Configuration Change Form, TCC SNC821047, Ver. 1.0, dated October 26, 2016
NMP-ES-084-005-F02, Temporary Configuration Change Installation Checklists, for TCC WO Number SNC821047, TCC Installation WO SNC821066, Ver. 1.0, dated November 4, 2016
NMP-ES-084-005-F03, Temporary Configuration Change Removal Checklist, Ver. 3.0, dated March 28, 2018
NMP-ES-084-005-F05, Temporary Configuration Change Control Room, Ver. 3.0, for WO SNC821047, dated March 27, 2018
NMP-ES-024-202, Visual leakage Examination Report (VT-2) dated April 2, 2018

Condition Reports:
10284838

71111.19: Post Maintenance Testing

Condition Reports:
10314575, 10388469, 10475560, 10475967, 10484899, 10486898, 10289402, 10486002, 10494634, 10494597, 10493987, 10487485, 10474956, 10475202, 10475312

Procedures:
FNP-1-STP-45.7, MSIV and Bypass Valves Inservice Test, Ver. 24.0
FNP-1-STP-11.1, 1A RHR Pump Quarterly Inservice Test, Ver. 62.0
FNP-0-SOP-38.0-2B, 2B Diesel Generator and Auxiliaries, Ver. 14.1

Work Orders:
SNC599030, SNC936106, SNC543710, SNC939303, SNC940978, SNC62114, SNC58136, SNC842295, SNC526647, SNC854363, SNC934255

Documents:
EN 53290
U-184627, Diesel Engine Generators Electrical Schematic Generator Panel (PC-2), Ver. 5
U-184852, Diesel Engine Generators 1-2A, 1B, and 2B Operation and Maintenance Manual Volumes I, II & III, Ver. 54

71111.20: Refueling and Other Outage Activities

Condition Reports:
10483886

Documents:
Unit 1 Main Control Room Logs, April 8, 2018
Shutdown Safety Assessment per FNP-0-UOP-4.0 for April 10, 2018
Pressure Temperature Limits Report, Unit 1, Rev. 6, November 2014
Tagouts: 1-DT-R28-E11-02010, 1-DT-R28-E21-03110,

Operations watch bill/schedule for 1R28, provided on April 19, 2018
Work Orders: SNC596593,
NMP-AD-016-004-F04 Weekly Reviews of PQ&S Data for Maintenance, April 1 – 20, 2018
Maintenance outage work schedules, 4/8-4/21/2018

Procedures:
FNP-1-UOP-2.4, Planned Reactor Shutdown and Cooldown to Cold Shutdown, Ver. 26
FNP-1-STP-35.0, Reactor Coolant System Pressure and Temperature/Pressurizer Temperature Limits Verification, Ver. 23.0
FNP-0-UOP-4.0, General Outage Operations Guidance, Ver. 58
FNP-1-SOP-1.6, Draining the Reactor Coolant System, Ver. 68
NMP-RE-007, Core Verification, Ver. 4
NMP-AD-016, Fatigue Management Program, Ver. 10.1
NMP-AD-016-003, Scheduling and Calculating Work Hours, Ver. 8.0
FNP-1-UOP-1.1, Startup of Unit from Cold Shutdown to Hot Standby, Ver. 109
FNP-1-UOP-1.2, Startup of Unit from Hot Standby to Minimum Load, Ver. 116
FNP-0-STP-101, Low Power Reactor Physics Testing, Ver. 1
FNP-1-STP-34.1, Containment inspection (Post Maintenance), Ver. 44.2
FNP-1-STP-35.1, Unit Startup Technical Specification Verification, Ver. 51

71111.22: Surveillance Testing
Condition Reports:
10483952, 10483953, 10487169

Procedures:
FNP-1-STP-608.0, Main Steam Safety Valve Operational Test, Ver. 45.0
FNP-0-M-93.0, Appendix J Option B Testing Plan, Ver. 19
FNP-1-STP-40.0A, Safety Injection with Loss of Off-Site Power Test – A Train, Ver. 6.1

Documents:
WO SNC824063, SNC480633
D-175002, Unit 1, P&ID – Component Cooling Water System, Sheet 2, Ver. 28

71151: Performance Indicator Verification
Procedures, Guidance Documents, and Manuals:
NMP-AD-029, Preparation and Reporting of Regulatory Assessment Performance Indicator Data and the Monthly Operating Report, Ver. 1.1

Records and Data:
Electronic Dosimeter Alarm Logs, 2016, 2017, and through April 2018
G-20180329-0253-C, EMS Gas Permit Post-Release Data, U-2 Steam Jet Air Ejector, 4/5/18
L-20180328-0380-C, EMS Liquid Permit Post-Release Data, U-2 Steam Gen Blowdown, 4/4/18
ROP Parent Process Data Review, Farley Unit 1 and Unit 2, Occupational Exposure Control Effectiveness and RETS/ODCM Radiological Effluent, July 2017 - March 2018

Other Documents:
MSPI Derivation Report, Farley Unit 1, Period March 2018, MSPI Cooling Water System, Unavailability Index (UA)
MSPI Derivation Report, Farley Unit 1, Period March 2018, MSPI Cooling Water System, Unreliability Index (URI)

MSPI Derivation Report, Farley Unit 2, Period March 2018, MSPI Cooling Water System, Unavailability Index (UA)
MSPI Derivation Report, Farley Unit 2, Period March 2018, MSPI Cooling Water System, Unreliability Index (URI)
MSPI Derivation Report, Farley Unit 1, Period March 2018, MSPI Residual Heat Removal System, Unavailability Index (UA)
MSPI Derivation Report, Farley Unit 1, Period March 2018, MSPI Residual Heat Removal System, Unreliability Index (URI)
MSPI Derivation Report, Farley Unit 2, Period March 2018, MSPI Residual Heat Removal System, Unavailability Index (UA)
MSPI Derivation Report, Farley Unit 2, Period March 2018, MSPI Residual Heat Removal System, Unreliability Index (URI)
MSPI Indicator Margin, Farley Unit 1, System ROP-MSPI Residual Heat Removal System, Period ending April 2017, May 2017, June 2017, July 2017, August 2017, September 2017, October, 2017, November 2017, December 2017, January 2018, February 2018, and March 2018
MSPI Indicator Margin, Farley Unit 2, System ROP-MSPI Residual Heat Removal System, Period ending April 2017, May 2017, June 2017, July 2017, August 2017, September 2017, October, 2017, November 2017, December 2017, January 2018, February 2018, and March 2018
MSPI Indicator Margin, Farley Unit 1, System ROP-MSPI- CWS MSPI Cooling Water System, Period ending April 2017, May 2017, June 2017, July 2017, August 2017, September 2017, October, 2017, November 2017, December 2017, January 2018, February 2018, and March 2018
MSPI Indicator Margin, Farley Unit 2, System ROP-MSPI- CWS MSPI Cooling Water System, Period ending April 2017, May 2017, June 2017, July 2017, August 2017, September 2017, October, 2017, November 2017, December 2017, January 2018, February 2018, and March 2018

71152: Problem Identification and Resolution

Condition Reports:

10485477, 846971, 10483961, 10488366, 10481961, 10482333, 10482275, 10483953, 10483952, 10475560, 10475660, 10475967, 10476885, 10476893, 10476901, 10477201, 10477250, 10477312, 10477848, 10478247, 10478441, 10477941, 10480257, 10482238, 10484326, 10484792, 10484899, 10486023, 10486843, 10487474, 10499201

Procedures:

FNP-2-STP-4.3, 2C Charging Pump Quarterly Inservice Test, Ver. 81.1
FNP-0-MP-39.0, Main Steam Valve Disassembly and Reassembly, Ver. 40.1
FNP-1-STP-45.7, MSIV and Bypass Valves Inservice Test, Ver. 24.0

Documents:

CAR 21152, Apparent Cause Determination Report, Ver. 1
TE863775, TE877699,
CAR 273683, Human Performance Checklist, Ver. 2.0
CAR 274123
CAR 272895
EN 53290
CAR 273268
WO SNC599030, SNC936106

Drawings:
D-205039, Sheet 6, Unit 2 - P&ID Chemical and Volume Control System, Ver. 10

71153: Event Followup

Documents:
Main Control Room Logs, dated Nov. 11 -13, 2017
CARs 271957, 271789, 271946
U-260268, Nuclear Instrumentation System Technical Manual, Ver. 8
TEs 998150, 997928, 997836, 998069
WOs SNC694775, SNC798621

Condition Reports:
10429911, 10445720, 10425739, 10426044, 10435092

Procedures:
NMP-AD-012, Operability Determinations and Functionality Assessments, Ver. 13.3
FNP-0-IMP-0.0, General Instrumentation and Controls Precautions and Limitations, Ver. 72.1
NMP-ES-001, Equipment Reliability Process Description, Ver. 9.3
FNP-2-STP-22.20, TDAFW Pump Steam Admission Valves Air Accumulator Test, Ver. 15.0
NMP-ES-014-010, AOV Diagnostic Testing and Signature Evaluation, Ver. 4.9

71124.01 – Radiological Hazard Assessment and Exposure Control

Procedures, Guidance Documents, and Manuals:
FNP-1-RCP-0.2, Unit-1 Reactor Vessel Maintenance Sump Entry, Ver. 5.0
NMP-GM-002-001, Corrective Action Program Instructions, Ver. 36.2
NMP-HP-301, Airborne Radioactivity Sampling and Evaluation, Ver. 3.6
NMP-HP-400, Control and Accountability of Radioactive Sources, Ver. 3.10

Records and Data:
Air Sample ID 129325, U1 CTMT Sump
Air Sample ID 202234, Transfer Canal Remove Blind Flange
Air Sample ID 202242, Cavity Head Lift U1
Plant Farley 2018 Annual Inventory Reconciliation Report, 01/17/2018
Plant Farley Perimeter TLD Monitoring Report, 2nd Half 2017, Dated February 8, 2018
Plant Farley Radiological Information Survey # 123272, Annual Source Inventory, 06/21/2017
Plant Farley Spent Fuel Storage Installation (ISFSI) Annual Radiological Survey 116828, 123016, 123317, and 124698
Radiological Survey 119410, U1 RHR Pump Room (1AB83131)
Radiological Survey 128524, U1 A/B Monday 83 ft.
Radiological Survey 129315, U1 CTMT Sump (1CB)
RWP 18-1456, Maintenance: RCP Maintenance, Rev 0.
RWP 18-1461, Maintenance: RX Services Work on the Rx Head, Rev 0.
RWP 18-1504, Operations: Refueling Activities in Support of the RFO, Rev 0.
Unit 1 and Unit 2 SFP Consolidated Trash Log Data, Updated: 10/04/2017

CAP Documents:
CR 10298244
CR 10282181
CR 10420729
CR 10420574

CR 10421636
CR 10433678
CR 10457086
TE 973438

71124.02 – ALARA Planning and Controls

Procedures, Guidance Documents, and Manuals:
NMP-GM-002-001, Corrective Action Program Instructions, Ver. 36.2
NMP-HP-204, ALARA Planning and Job Review, Ver. 5.5
NMP-HP-206, Issuance, Use, and Control of Radiation Work Permits

Records and Data:
Farley 1R28 PARC Meeting Minutes, 5/2/18
Farley Nuclear PARC Meeting Minutes, 3/19/18
NMP-HP-204, Attachment 1, Form 6 - Post-Job ALARA Review, RWP 16-1461, Reactor Head Disassembly / Assembly, 10/26/16
Plant Farley 2017 2R25 ALARA Outage Report, 3/5/18
Plant Farley 2017 RP Annual Review, 3/16/18
Southern Nuclear Operating Company, Strategic Plan for Radiation Exposure Reduction, 2015 - 2020

CAP Documents:
CR 10308398
CR 10323623
CR 10431988
CR 10474590

71124.03 – In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals:
NMP-GM-002-001, Corrective Action Program Instructions, Ver. 36.2
NMP-HP-501-001, Instruction for Selection and Use of Respiratory Protection Equipment for Radiological Protection, Ver. 1.4
NMP-HP-504, Quantitative Fit Testing of Individuals for Respirator Use, Ver. 2.4
NMP-HP-514, Operation of the 3M Airmate Hood and PAPR Blower Unit, Ver. 1.1
NMP-HP-515, 3M Versaflo Powered Air Purifying Respiratory (PAPR) Use and Control, Ver. 1.1
Operation of the 3M Airmate Hood and PAPR Blower Unit, Ver. 1.1

Records and Data:
3M Versaflo PAPR Job Aid F-RADTSK141 Backbone Training, 04/06/2017
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71124.04 – Occupational Dose Assessment

Procedures, Guidance Documents, and Manuals:
NMP-GM-002-001, Corrective Action Program Instructions, Ver. 36.2
NMP-HP-101, In-Vivo Bioassay and Internal Dose Assessment, Ver. 3.1
NMP-HP-102, In-Vitro Bioassay, Ver. 1.2
NMP-HP-103, Skin Dose Assessment, Ver. 1.2
NMP-HP-104-003, Performing Whole Body Counts, Ver. 1.2
NMP-HP-105, Comparison of OSLD and ED Dosimetry Results, Ver. 1.3
NMP-HP-107, Individual Radiation Exposure Records and Reports, Ver. 3.5
NMP-HP-108-002, Use of EDE (Effective Dose Equivalent) Methodologies, Ver. 3.0
NMP-HP-201, Personnel Dosimetry Program, Ver. 2.2
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71124.05 – Radiation Monitoring Instrumentation

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NMP-HP-708, Operation and Calibration of the MGPI Telepole Instrument, Ver. 4.0
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60855.1 - Operation of an Independent Spent Fuel Storage Installation

Procedures:
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Condition Reports:
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