



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II

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

January 27, 2017

Dennis 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 – NRC INTEGRATED INSPECTION
REPORT 05000348/2016004 and 05000364/2016004**

Dear Mr. Madison:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Joseph M. Farley Nuclear Plant, Units 1 and 2. On January 23, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented three findings, two NRC-identified and one self-revealing violation, of very low safety significance (Green) in this report which involved violations of NRC requirements. Further, inspectors documented a licensee-identified violation which was determined to be of very low safety significance (Green). 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 these 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; 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 Regional Administrator, Region II; and the NRC resident inspector at the Joseph M. Farley Nuclear Plant, Units 1 and 2.

D. Madison

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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/

Shane Sandal, Chief
Reactor Projects Branch 2
Division of Reactor Projects

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

Enclosure:
IR 05000348/2016004, 05000364/2016004
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Letter to Dennis Madison from Shane Sandal dated January 27, 2017

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – NRC INTEGRATED INSPECTION
REPORT 05000348/2016004 and 05000364/2016004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-348, 50-364

License Nos.: NPF-2, NPF-8

Report No.: 05000348/2016004; and 05000364/2016004

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Joseph M. Farley Nuclear Plant

Location: Columbia, Alabama

Dates: October 1, 2016 through December 31, 2016

Inspectors: P. Niebaum, Senior Resident Inspector
K. Miller, Resident Inspector
D. Mas Peñaranda, Project Engineer
B. Collins, Reactor Inspector (1R08)
B. Caballero, Senior Operations Engineer (1R11)
A. Nielsen, Senior Health Physicist (2RS1, 2RS3, 4OA1)
W. Pursley, Health Physicist (2RS2 & 2RS4)
J. Panfel, Health Physicist (2RS5)

Approved by: Shane Sandal, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000348/2016004; and 05000364/2016004, October 1, 2016, through December 31, 2016; Joseph M. Farley Nuclear Plant, Units 1 and 2, Fire Protection, Problem Identification and Resolution, Follow up of Events

The report covered a 3-month period of inspection by resident inspectors and regional inspectors. There are two NRC identified and one self-revealing violations documented in this report. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects within the Cross-Cutting Areas" dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated November 1, 2016. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6. Documents reviewed by the inspectors not identified in the Report Details are identified in the List of Documents Reviewed section of the Attachment.

Cornerstone: Initiating Events

- Green: A self-revealing non-cited violation (NCV) of Technical Specification 5.4, "Procedures," was identified on October 1, 2016, when the Unit 1 operations shift crew failed to comply with annunciator response procedure FNP-1-ARP-1.9, Ver. 50 for the "JC4" annunciator. Conditions were met to trip the reactor, but the operations shift crew failed to do so. As a result, approximately 35 minutes later, MSIV 3369A closed which resulted in an automatic reactor trip and safety injection actuation. The failure of the operations shift crew to follow procedure FNP-1-ARP-1.9 was a performance deficiency (PD). This event was captured in the licensee's corrective action program with condition report (CR) 10280729. The licensee established a root cause evaluation team, identified the root causes, and implemented corrective actions (CAR 266911).

The PD was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone objective and adversely affected that objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically a manual reactor trip of Unit 1 as required by the ARP, would have prevented the automatic reactor trip and the automatic safety injection actuation. The significance of this finding was evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for findings at Power," dated June 19, 2012. This finding was determined to be of very low safety significance (Green) because, while this issue resulted in a reactor trip, it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition. The inspectors determined the finding had a cross-cutting aspect of Procedure Adherence in the Human Performance area, because the ARP was not followed and the operations crew did not trip the reactor as required by the procedure. [H.8] (Section 4OA3.1)

Cornerstone: Mitigating Systems

- Green: An NRC-identified non-cited violation (NCV) of 10 CFR 50.48(c) and National Fire Protection Association Standard 805 (NFPA 805), Section 3.3.12, was identified for the licensee's failure to comply with code requirements for design and installation of the Unit 1 Reactor Coolant Pump (RCP) oil collection system. The oil collection system did not include gaskets between the bolted joints on the RCP oil catch-basins, as required by the approved design for the Oil Spillage Protection System (OSPS). The licensee's failure to install gaskets on the Unit 1 RCP oil collection systems was a performance deficiency. The licensee was informed of the inspector observation and initiated CR 10289565. Gasket material was installed on all three RCPs on October 23, 2016, as documented on WO SNC464660, SNC459614, and SNC406358.

The performance deficiency was more than minor because if left uncorrected, the inadequate installation of the RCP oil collection system presented a degradation of a fire confinement function to prevent oil to leak onto hot surfaces. The significance of this finding was evaluated using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the performance deficiency affected fire protection defense-in-depth strategies involving fire confinement. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) because the exposed fire area contains no potential damage targets that are unique from those in the exposing fire area. The inspectors determined the finding had a cross-cutting aspect of Procedure Adherence in the human performance area because the vendor installing the oil catch-basins did not follow the RCP reassembly procedure which required gaskets between all bolted joints. [H.8] (Section 1R05)

- Green: An NRC-identified non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because the licensee failed to identify and correct conditions adverse to quality associated with the flood protection design basis of the Unit 1 Auxiliary Building. Specifically, the licensee failed to identify missing conduit covers in electrical conduits that penetrate the Unit 1 auxiliary building below the flood protection design basis elevation of 154.5 feet (MSL). The inspectors determined that the failure to identify missing conduit covers in electrical conduits that penetrate the Unit 1 auxiliary building below the flood protection design basis elevation of 154.5 feet was a performance deficiency. The discovery of the missing conduit covers was captured in the licensee's corrective action program with CR 10273516. The licensee implemented WO SNC815778 to replace missing conduit covers. Corrective actions to inspect the remaining below grade pipe trenches are being developed and scheduled.

The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events. Specifically, flood water could enter the Auxiliary Building Lower Equipment Room through unsealed electrical conduits and render the TDAFW Pump inoperable. In accordance with IMC 0609.04, "Initial Characterization of

Findings,” and Exhibit 2 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power,” issued June 19, 2012, the inspectors utilized Section B, “External Event Mitigation Systems (Seismic/Fire/Flood/Severe Weather Degraded),” and Exhibit 4 of Appendix A and determined the finding did not involve a total loss of any safety function, identified through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The two motor driven AFW pumps are also located in the lower equipment room but are protected behind watertight doors and can satisfy the AFW safety function. Therefore, the finding screened to Green. The inspectors determined the finding had a cross-cutting aspect of Procedures in the human performance area because the licensee missed two opportunities to follow the NEI 12-07 guidance to evaluate the adequacy of the flood protection features below the design basis flood protection elevation.[H.8] (Section 4OA2.3)

A violation of very low safety significance that was identified by the licensee has been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. This violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1: Unit 1 started the report period at or near 100 percent rated thermal power (RTP). On October 1, Unit 1 experienced an automatic reactor trip and safety injection when main steam isolation valve (MSIV) 3369A closed. Unit 1 transitioned to a planned refueling outage (RFO) and remained in the RFO until November 7. On November 8, Unit 1 began reducing power due to a main generator hydrogen cooler leak and was manually tripped from 32 percent RTP due to unresponsive steam generator feed pump (SGFP) speed controllers. Unit 1 remained in a forced outage until November 15. On November 17, Unit 1 was shut down for two inoperable steam flow channels associated with the 'C' steam generator. Following steam flow channel recalibrations, Unit 1 was restarted and reached 100 percent RTP on November 21. On November 27, Unit 1 was manually tripped due to main generator voltage and load instability. Following repairs to the main generator exciter, Unit 1 achieved 100 percent RTP on November 30 and remained at that power level through the end of the report period.

Unit 2: Unit 2 operated at approximately 100 percent RTP throughout the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Impending Adverse Weather Conditions: The inspectors reviewed the licensee's preparations to protect risk-significant systems from adverse weather conditions expected during the week of November 28, 2016. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of the adverse weather conditions. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintain readiness of essential systems. The inspectors also verified that the licensee implemented periodic equipment walkdowns or other measures to ensure that the condition of plant equipment met operability requirements.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)a. Inspection Scope

Partial Walkdown: The inspectors verified that critical portions of the following systems were correctly aligned by performing partial walkdowns. The inspectors determined the correct system lineup by reviewing plant procedures and drawings listed in the Attachment.

- Unit 2, “2A” motor driven auxiliary feedwater pump
- Unit 1, “1A” motor driven auxiliary feedwater pump

The inspectors reviewed corrective action documents, including condition reports and outstanding work orders, to verify the licensee was identifying and resolving equipment alignment discrepancies. The inspectors also reviewed periodic reports containing information on the status of risk-significant systems, including maintenance rule reports and system health reports.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)a. Inspection Scope

Quarterly Inspection: The inspectors evaluated the adequacy of fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program the following fire areas.

- Unit 1, Room 055 – Containment Building, Fire Zone 1-CTMT
- Unit 1 and 2, Common Main Control Room, Fire Zone 401

The inspectors assessed the following:

- control of transient combustibles and ignition sources
- fire detection systems
- water-based fire suppression systems
- gaseous fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee’s corrective action program
- material condition and operational status of fire protection equipment

b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR 50.48(c) and National Fire Protection Association Standard 805 (NFPA 805), Section 3.3.12, was identified for the licensee's failure to comply with code requirements for design and installation of the Unit 1 Reactor Coolant Pump (RCP) oil collection system. The oil collection system did not include gaskets between the bolted joints on the RCP oil catch-basins, as required by the approved design for the Oil Spillage Protection System (OSPS).

Description: On October 22, 2016, the inspectors performed a Unit 1 containment building closeout inspection and noted that all three RCP oil collection systems lacked Viton gaskets on the flanged mating surfaces of the oil catch-basins, as required by Westinghouse drawings 9752DD53, Sheets 1 & 2, which are contained in Instruction Manual U258242, Version 12. The gaskets were necessary to ensure an oil tight seal at the flanged joints. Each lower bearing reservoir contains approximately 25 gallons of lubricating oil. The 2001 Edition of NFPA-805, Section 3.3.12, Reactor Coolant Pumps, required that the oil collection system shall be designed and installed such that leakage from the oil system is safely contained for off normal conditions such as accident conditions or earthquakes. Without the required gaskets between the flanged mating surfaces of the oil catch-basins, there is a possibility that the oil could leak from oil catch-basin flanged joints and come in contact with surfaces hot enough to ignite the oil. The OSPS oil catch-basins were reinstalled without gaskets on all three RCPs on October 20, 2016, and the installations received Vendor Quality Control acceptance on October 22, 2016. The licensee was informed of the inspector observation and initiated CR 10289565. Gasket material was installed on all three RCPs on October 23, 2016, as documented on WO SNC464660, SNC459614, and SNC406358.

Analysis: The licensee's failure to install gaskets on the Unit 1 RCP oil collection systems was a performance deficiency. The performance deficiency was more than minor because if left uncorrected, the inadequate installation of the RCP oil collection system presented a degradation of a fire confinement function to prevent oil from leaking onto hot surfaces. The significance of this finding was evaluated using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the performance deficiency affected fire protection defense-in-depth strategies involving fire confinement. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) because the exposed fire area contains no potential damage targets that are unique from those in the exposing fire area. The inspectors determined the finding had a cross-cutting aspect of "procedure adherence" in the human performance area because the vendor installing the oil catch-basins did not follow the RCP reassembly procedure which required gaskets between all bolted joints. (H.8)

Enforcement: Farley Nuclear Plant, Unit 1, Operating License Condition 2.C.(4), required, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program (FPP) that comply with 10 CFR 50.48(c), as specified in the license amendment request dated September 25, 2012, and supplements dated December 20, 2012; September 16, 2013; October 30, 2013; November 12, 2013; April 23, 2014, May 23, 2014; July 3, 2014; August 11, 2014; August 29, 2014; October 13, 2014; January 16, 2015, and as approved in the safety

evaluation reports (SER) dated March 10, 2015 and October 17, 2016. The 2001 Edition of NFPA-805, Section 3.3.12, Reactor Coolant Pumps, required that the oil collection system shall be designed and installed such that leakage from the oil system is safely contained for off normal conditions such as accident conditions or earthquakes. Leakage points on a reactor coolant pump motor to be protected shall include but not be limited to the lift pump and piping, overflow lines, oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and the oil reservoirs, where such features exist on the reactor coolant pumps. Contrary to the above, the licensee failed to comply with their FPP (NFPA-805 code) requirements for the Unit 1 RCP oil collection system. Code requirements for oil collection systems for reactor coolant pumps specify the lube oil collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. The OSPS cannot be relied upon to meet these requirements if it is not installed as-designed. Because the licensee included this deficiency in their corrective action program as CR10289565 and because the deficiency had very low safety significance, this finding was treated as an NCV, consistent with the NRC Enforcement Policy. NCV 05000348/2016004-01, "Failure to Adequately Install an Oil Collection System on Reactor Coolant Pump Motors".

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: The inspectors conducted an onsite review of the implementation of the licensee's inservice inspection (ISI) program for monitoring degradation of the reactor coolant system boundary, risk-significant piping and component boundaries, and containment boundaries in Unit 1.

The inspectors either directly observed or reviewed the following non-destructive examinations (NDEs) mandated by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code of Record: 2004 Edition with no Addenda) to evaluate compliance with the ASME Code, Section XI and Section V requirements and, if any indications or defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement. The inspectors also reviewed the qualifications of the NDE technicians performing the examinations to determine whether they were current and in compliance with the ASME Code requirements.

- Ultrasonic Examination (UT), 12" elbow-to-pipe weld (ALA1-4301-5-RB), residual heat removal system, ASME Class 1 (observed)
- UT, 27.5" nozzle-to-safe end and safe end-to-pipe welds (ALA1-4200-13 and ALA1-4200-14DM, respectively), reactor vessel inlet welds @ 335°, ASME Class 1 (reviewed)
- Eddy Current Examination, 27.5" nozzle-to-safe end and safe end-to-pipe welds (ALA1-4200-13 and ALA1-4200-14DM, respectively), reactor vessel inlet welds @ 335°, ASME Class 1 (reviewed)
- Liquid Penetrant Examination, 2 control rod drive housing welds (ALA1-1300-35R-L and ALA1-1300-40R), ASME Class 1 (observed)

The inspectors either directly observed or reviewed the following welding activities, qualification records, and associated documents in order to evaluate compliance with procedures and the ASME Code, Section XI and Section IX requirements. Specifically, the inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- SNC817876, Work Order: "Through-Wall Leak on Service Water Piping; Replace Piping During 1R27, "6" pipe-to-elbow weld, service water system, ASME Class 3 (observed)

During non-destructive surface and volumetric examinations performed since the previous refueling outage, the licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service; therefore, no NRC review was completed for this inspection procedure attribute.

PWR Vessel Upper Head Penetration Inspection Activities: The inspectors verified that for the Unit 1 vessel head, neither a bare metal visual examination nor a volumetric examination was required during this outage, in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D).

Boric Acid Corrosion Control Inspection Activities: The inspectors reviewed the licensee's boric acid corrosion control (BACC) program activities to determine if the activities were implemented in accordance with the commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," and applicable industry guidance documents. Specifically, the inspectors performed an onsite records review of procedures and the results of the licensee's containment walkdown inspections performed during the current refueling outage. The inspectors also interviewed the BACC program owner; conducted an independent walkdown of containment to evaluate compliance with licensee's BACC program requirements; and verified that degraded or non-conforming conditions, such as boric acid leaks, were properly identified and corrected in accordance with the licensee's BACC and corrective action programs.

The inspectors reviewed the following engineering evaluations, completed for evidence of boric acid leakage, to determine if the licensee properly applied applicable corrosion rates to the affected components; and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity in accordance with the licensee procedures.

- CR10075988, Boron on Cap/Flange of Q1B13V075B Valve
- CR10064616, Active Boric Acid Leak on Q1B13V094B Valve
- CR10048562, Boron Buildup Noted on Q1B21FT0424

The inspectors reviewed the following condition reports and associated corrective actions related to evidence of boric acid leakage to evaluate if the corrective actions completed were consistent with the requirements of the ASME Code and 10 CFR Part 50, Appendix B, Criterion XVI.

- 1B13-2015-001, Boric Acid Leak on Q1B13V003 Valve, dated 9/28/2015
- 1B21-2015-001, Moderate Accumulation from Leak on Q1B21FT0416, dated 7/30/2015
- 1E11-2015-001, Moderate-to-Heavy Accumulation Found on Q1E11V044 Valve, dated 9/29/2015

Steam Generator Tube Inspection Activities: The inspectors verified that for the Unit 1 steam generator tubes, no inspection activities were required this refueling outage, in accordance with the requirements of the ASME Code, the licensee's Technical Specifications, and Nuclear Energy Institute 97-06, "Steam Generator Program Guidelines."

Problem Identification and Resolution: The inspectors reviewed a sample of ISI-related issues entered into the corrective action program to determine if the licensee had appropriately described the scope of the problem and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11)

a. Inspection Scope

Resident Inspector Quarterly Review of Licensed Operator Regualification: The inspectors observed a just-in-time (JIT) simulator scenario on October 19, 2016 conducted for training of an operating crew to reinforce operations standards. The inspectors assessed the following:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Resident Inspector Quarterly Review of Licensed Operator Performance: The inspectors observed licensed operator performance in the Unit 1 main control room for the following evolutions:

- review of plant cooldown to Mode 5 on October 2,
- during the preparations for the Unit 1 reactor startup for low power physics testing on Oct. 30,
- during a reactor startup on October 31,
- during a reactor startup on November 5,
- during a load reduction to remove the main generator from service for Hydrogen cooler leak

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision oversight

Annual Review of Licensee Regualification Examination Results: On June 16, 2016, the licensee completed the comprehensive biennial requalification written examinations, and on September 22, 2016, the licensee completed the annual requalification operating examinations, which are required to be administered to all licensed operators in accordance with Title 10 of the Code of Federal Regulations 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." The inspectors performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. The inspectors also interviewed system engineers and the maintenance rule coordinator to assess the accuracy of any performance deficiencies and extent of condition.

- ES1 and ES2 Emergency Start Relay contact failures on 1B Emergency DG
- Review of preventive maintenance change requests (PMCR) 85556 and 85557

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)a. Inspection Scope

The inspectors reviewed the maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities.

- Unit 1, November 3, 2016 – integrated risk evaluation of spare 1C battery charger breaker removal
- Unit 1, November 17, 2016 – 'A' train residual heat removal (RHR) equipment outage

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)a. Inspection Scope

Operability Determinations and Functionality Assessments Review: The inspectors selected the operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- CR 10289402, did not get expected alarms FA1 and FA3 during SNC729632
- CR 2005106694, evaluate maximum turbine driven auxiliary feedwater thrust bearing temperature

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)a. Inspection Scope

For the plant modifications listed below, the inspectors;

- verified that the modifications did not affect the safety functions of important safety systems.
- confirmed the modifications did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components.
- verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition.
- evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements.
- reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications.

Plant Modification:

- Implementation of Design Change SNC368758, Residual Heat Removal Auto Closure Interlock Elimination
- Temporary configuration change (TCC) SNC821047, Spent Fuel Pool Cooling Loop Drain Valve Q1G31V017 Furmanite Clamp

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- SNC 821711, Unit 1 B Train service water cable replacement
- SNC 431387, Unit 1 B Train 125VDC auxiliary building battery replacement

The inspectors evaluated these activities for the following:

- Acceptance criteria were clear and demonstrated operational readiness.
- Effects of testing on the plant were adequately addressed.
- Test instrumentation was appropriate.
- Tests were performed in accordance with approved procedures.
- Equipment was returned to its operational status following testing.
- Test documentation was properly evaluated.

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

For the Unit 1 refueling outage from October 1, 2016, through November 7, 2016, the inspectors evaluated the following outage activities:

- outage planning
- fatigue management
- shutdown, cooldown, refueling, heatup, and startup
- reactor coolant system instrumentation and electrical power configuration
- reactivity and inventory control
- decay heat removal and spent fuel pool cooling system operation
- containment closure

The inspectors verified that the licensee:

- considered risk in developing the outage schedule
- controlled plant configuration in accordance with administrative risk reduction methodologies
- developed work schedules to manage fatigue
- developed mitigation strategies for loss of key safety functions
- adhered to operating license and technical specification requirements

Inspectors verified that safety-related and risk-significant structures, systems, and components not accessible during power operations were maintained in an operable condition. The inspectors also reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the surveillance tests listed below. The surveillance test was either observed directly or test results were reviewed to verify testing activities and results provide objective evidence that the affected equipment remain capable of performing their intended safety functions and maintain their operational readiness

consistent with the facility's current licensing basis. The inspectors evaluated the test activities to assess for:

- preconditioning of equipment,
- appropriate acceptance criteria,
- calibration and appropriateness of measuring and test equipment,
- procedure adherence, and
- equipment alignment following completion of the surveillance.

Additionally, the inspectors reviewed a sample of significant surveillance testing problems documented in the licensee's corrective action program to verify the licensee was identifying and correcting any testing problems associated with surveillance testing.

Routine Surveillance Tests

- FNP-0-STP-80.1, Diesel Generator 1-2A Operability Test, Ver. 70.0
- FNP-1-STP-905.5, Auxiliary Building Battery Modified Performance Test, Ver. 7

In-Service Tests (IST)

- FNP-1-STP-16.10, Containment Spray Pump Comprehensive & Check Valves Flow Test A-Train, Ver. 30

Containment Isolation Valve

- FNP-1-STP-627.0, Local Leak Rate Testing of Containment Penetrations, Ver. 48

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours, the inspectors directly observed radiological postings and container labeling for areas established within the radiologically controlled area (RCA) of the Unit 1 (U1) containment building, U1 and Unit 2 (U2) auxiliary building, Independent Spent Fuel Storage Installation (ISFSI), and radioactive waste processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed survey records for several plant areas including surveys for airborne radioactivity, gamma surveys with a range of dose rate gradients, surveys for alpha-emitters and other hard-to-detect radionuclides, and pre-job surveys for upcoming tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. The inspectors attended pre-job briefings and reviewed Radiation Work Permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Hazard Control: The inspectors evaluated access controls and barrier effectiveness for selected High Radiation Area (HRA), Locked High Radiation Area (LHRA), and Very High Radiation Area (VHRA) locations and discussed changes to procedural guidance for LHRA and VHRA controls with Radiation Protection (RP) supervisors. The inspectors reviewed implementation of controls for the storage of irradiated material within the spent fuel pool. Established radiological controls, including airborne controls and electronic dosimeter (ED) alarm setpoints, were evaluated for selected U1 Refueling Outage 27 (U1R27) job tasks. In addition, the inspectors reviewed licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations. The inspectors also reviewed the use of personnel dosimetry including extremity dosimetry and multibadging in high dose rate gradients.

Radiation Worker Performance and RP Technician Proficiency: Occupational workers' adherence to selected RWPs and RP technician proficiency in providing job coverage in radiologically significant areas were evaluated through direct observations and interviews with licensee staff. Jobs observed included maintenance work in the transfer canal and lifting of reactor vessel upper internals. The inspectors also evaluated worker responses to dose and dose rate alarms during selected work activities.

Problem Identification and Resolution: The inspectors reviewed and assessed condition reports (CR) associated with radiological hazard assessment and control. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: RP activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12, Technical Specifications (TS) Sections 5.4 and 5.7, 10 CFR Parts 19 and 20, and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, "Control of Radioactively Contaminated Material."

b. Findings

No findings were identified.

2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

Work Planning and Exposure Tracking: The inspectors reviewed work activities and their collective exposure estimates for the U1R27. The inspectors reviewed ALARA

planning packages for activities related to the following high collective exposure tasks: reactor (Rx) transfer canal work, residual heat removal heat exchanger maintenance, Rx head assembly/disassembly and Mechanical Stress Improvement Process work. For the selected tasks, the inspectors reviewed established dose goals and discussed assumptions regarding the bases for the current estimates with responsible ALARA planners. The inspectors evaluated the incorporation of exposure reduction initiatives and operating experience, including historical post-job reviews, into RWP requirements. Day-to-day collective dose data for the selected tasks were compared with established dose estimates and evaluated against procedural criteria (work-in-progress review limits) for additional ALARA review. Where applicable, the inspectors discussed changes to established estimates with ALARA planners and evaluated them against work scope changes or unanticipated elevated dose rates.

Source Term Reduction and Control: The inspectors reviewed the collective exposure three-year rolling average from 2013 – 2015. The inspectors evaluated historical dose rate trends for U1 reactor coolant system piping and compared them to current dose rates for U1R27. Source term reduction initiatives, including cobalt reduction and zinc injection, were reviewed and discussed with RP staff. The inspectors also reviewed temporary shielding packages for U1R27.

Radiation Worker Performance: As part of Inspection Procedure (IP) 71124.01, the inspectors observed pre-job ALARA briefings and radiation worker performance for various HRA jobs in the auxiliary building and containment. While observing job tasks, the inspectors evaluated the use of remote technologies to reduce dose including teledosimetry and remote visual monitoring.

Problem Identification and Resolution: The inspectors reviewed and discussed selected Corrective Action Program (CAP) documents associated with ALARA program implementation. The inspectors evaluated the licensee's ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: ALARA program activities were evaluated against the requirements of UFSAR Section 12, TS Section 5.4, 10 CFR Part 20, and approved licensee procedures.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity during U1R27 work activities. The inspectors observed the use of portable air filtration units for work in contaminated areas of the RCA and reviewed filtration unit testing certificates. The inspectors evaluated the effectiveness of continuous air monitors to provide indication of increasing airborne levels (including evaluation of alpha emitting nuclides) and the placement of air samplers in work area "breathing zones."

Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations. The inspectors reviewed ALARA evaluations for respiratory protection devices used during the U2 spring 2016 refueling outage. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPR)s staged for routine and emergency use in the Main Control Room and other locations were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and availability of air bottles. The inspectors reviewed maintenance records for selected SCBA units for the past two years and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors observed the use of respiratory protection devices during maintenance work in the U1 fuel transfer canal. The inspectors discussed training for various types of respiratory protection devices with licensee staff and interviewed radworkers and control room operators on use of the devices including SCBA bottle change-out and use of corrective lens inserts. The inspectors reviewed respirator qualification records (including medical qualifications) for several Main Control Room operators and emergency responder personnel. In addition, inspectors evaluated qualifications for individuals responsible for testing and repairing SCBA vital components.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with airborne controls and respiratory protection activities. The inspectors evaluated the licensee's ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: RP program activities associated with airborne radioactivity monitoring and controls were evaluated against details and requirements documented in the UFSAR Chapter (12); TS Section 5.4, 10 CFR Part 20; Regulatory Guide (RG) 8.15, "Acceptable Programs for Respiratory Protection" and approved licensee procedures.

b. Findings

No Findings were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

Source Term Characterization: The inspectors reviewed the plant radiation characterization (including gamma, beta, alpha, and neutron) being monitored verified the use of scaling factors to account for hard-to-detect radionuclides in internal dose assessments.

External Dosimetry: The inspectors reviewed National Voluntary Accreditation Program (NVLAP) certification data for the licensee's Optically Stimulated Luminescent Dosimeter (OSL) processor for the current year for Ionizing Radiation Dosimetry. The inspectors observed and evaluated onsite storage of OSLs. Comparisons between ED and OSL

results, including correction factors, were reviewed and discussed. The inspectors also evaluated licensee procedures for unusual dosimetry occurrences. ED alarm logs were reviewed as part of IP 71124.01.

Internal Dosimetry: The inspectors reviewed and discussed the in vivo bioassay program with the licensee. Inspectors reviewed procedures that addressed methods for determining internal or external contamination, releasing contaminated individuals, and the assignment of dose. The inspectors reviewed recent positive body burden analysis results and the licensee's assessment of these doses. In addition, the inspectors evaluated the licensee's program for in vitro monitoring. The inspectors also reviewed contamination logs and evaluated events with the potential for internal dose.

Special Dosimetric Situations: The inspectors reviewed records for declared pregnant workers (DPW)s from November 2014 through September 2016 and discussed guidance for monitoring and instructing DPWs. Inspectors reviewed the licensee's program for monitoring external dose in areas of expected dose rate gradients, including the use of multi-badging and extremity dosimetry. The inspectors evaluated the licensee's neutron dosimetry program including instrumentation used to perform neutron surveys. In addition, the inspectors reviewed the licensee's program for evaluation of shallow dose equivalent (SDE). The inspectors also reviewed contamination logs and evaluated events with the potential for SDE.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment including self-assessments. The inspectors evaluated the licensee's ability to identify and resolve issues.

Inspection Criteria: The licensee's occupational dose assessment activities were evaluated against the requirements of UFSAR Section 12; TS Section 5.4; 10 CFR Parts 19 and 20; and approved licensee procedures.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors reviewed the licensee's radiation monitoring instrumentation programs to verify the accuracy and operability of radiation monitoring instruments used to monitor areas, materials, and workers to ensure a radiologically safe work environment during normal operations and under postulated accident conditions.

Walkdowns and Observations: During tours of the site areas, the inspectors observed installed radiation detection equipment including the following instrument types: area radiation monitors (ARMs), continuous air monitors (CAMs), personnel contamination monitors (PCMs), small article monitors (SAMs), and portal monitors (PMs). The inspectors observed the calibration status, physical location, material condition and compared technical specifications for this equipment with UFSAR requirements. In

addition, the inspectors observed the calibration status and functional checks of selected in-service portable instruments and discussed the bases for established frequencies and source ranges with RP staff personnel. The inspectors reviewed periodic source check records for compliance with plant procedures and manufacturer's recommendation for selected instruments and observed the material condition of sources used.

Calibration and Testing Program: The inspectors reviewed calibration data for selected ARMs, PCMs, PMs, SAMs, and laboratory instruments as well as the last calibration and methodology for the whole body counter. The inspectors reviewed calibration data, methodology used and the source certification for the containment high range monitor and other monitors including the area monitors within the Control Room and Technical Support Center, the fuel handling area radiation monitor, and the Component Cooling Water Area radiation monitor. The current output values for the portable instrument calibrator and the instrument certifications used to develop them were reviewed by the inspectors. The inspectors reviewed the licensee's process for investigating instruments that are removed from service for calibration or response check failures and discussed specific instrument failures with plant staff. In addition, the inspectors reviewed 10CFR-61 data to determine if sources used in the maintenance of the licensee's radiation detection instrumentation were representative of radiation hazards in the plant and scaled appropriately for "hard to detect" nuclides.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with radiological instrumentation including licensee sponsored assessments. The inspectors evaluated the licensee's ability to identify and resolve issues

Inspection Criteria: Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, "Clarification of TMI Action Plan Requirements"; UFSAR Chapters 11 and 12, and applicable licensee procedures.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on December 8, 2016. The inspectors observed licensee activities in the simulator and/or technical support center to evaluate implementation of the emergency plan, including event classification, notification, dose assessment, and protective action recommendations. The inspectors evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records to verify the accuracy and completeness of the data reported. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures.

Cornerstone: Mitigating Systems

- high pressure injection system (Units 1 and 2)
- emergency AC power system (Units 1 and 2)
- heat removal system (Units 1 and 2)

The inspectors verified the accuracy of reported data between November 2015 and October 2016 that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data.

Occupational Radiation Safety Cornerstone

- Occupational Exposure Control Effectiveness

The inspectors reviewed the PI results from April 2015 through August 2016. For the assessment period, the inspectors reviewed electronic dosimeter alarm logs and CRs related to controls for exposure significant areas.

Public Radiation Safety Cornerstone

- Radiological Control Effluent Release Occurrences

The inspectors reviewed the PI results from July 2015 through August 2016. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

The inspectors screened items entered into the licensee's corrective action program in order to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed issues entered in the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on transient combustibles, but also considered the results of inspector daily condition report screenings, licensee trending efforts, and licensee human performance results. The review nominally considered the 6-month period of July 2016 thru December 2016 although some examples extended beyond those dates when the scope of the trend warranted. The inspectors compared their results with the licensee's analysis of trends. Additionally, the inspectors reviewed the adequacy of corrective actions associated with a sample of the issues identified in the licensee's trend reports. The inspectors also reviewed corrective action documents that were processed by the licensee to identify potential adverse trends in the condition of structures, systems, and/or components as evidenced by acceptance of long-standing non-conforming or degraded conditions.

b. Findings and Observations

No findings were identified

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of the following condition reports:

- CR10289679, PCV444B Faulty Open Indication
- CR10273516, Missing condulet covers in the U1 AFW CST pipe trench

The inspectors evaluated the following attributes of the licensee's actions:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem
- identification of any additional condition reports

- completion of corrective actions in a timely manner

b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, was identified because the licensee failed to identify and correct conditions adverse to quality associated with the flood protection design basis of the Unit 1 Auxiliary Building. Specifically, the licensee failed to identify missing conduit covers in electrical conduits that penetrate the Unit 1 auxiliary building below the flood protection design basis elevation of 154.5 feet (MSL).

Description: During site flood protection walkdowns in 2012 in response to the NRC's "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force (NTTF) Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340), the licensee was required to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers and seals in the interim period until longer term actions were completed to update the design basis for external events. The walkdown guidance is contained in Nuclear Energy Institute (NEI) 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features," dated May 2012 (ADAMS Accession No. ML12144A401). Section 5.5.2 of NEI 12-07 states that if "visual inspection of the flood protection feature is relevant, perform an external visual inspection for indications of degradation that would prevent its credited function from being performed. Conditions that should be recorded (but are not limited to) missing flood protection features, severe corrosion, missing fittings, missing fasteners or structural anchors, water leakage pathways through barriers (for example, conduit that is below the licensing basis flood level), degraded/missing penetration seals, degraded/missing door seals, etc." The Unit 1 NTTF walkdown did not include a review of four below-grade electrical conduit penetrations into the Unit 1 auxiliary building access hatch area from the condensate pipe trench. The electrical conduits (two 3" diameter, one 2" diameter, and one 1-1/2" diameter) penetrate through the concrete wall into the Auxiliary Building at approximately El. 149 feet to El. 152 feet. Section 3.4.1, "Flood Protection" of Revision 27 of the final safety analysis report (FSAR) stated in part that safety-related systems, equipment and components are protected against floods by virtue of being located in flood protected structures. These systems, equipment, and components are located on, above, or flood protected to the plant grade elevation of 154.5 feet.

On December 23, 2013, the NRC issued a Request for Additional Information (RAI) associated with the NTTF Recommendation 2.3 flood walkdowns. The purpose of the RAI was to ensure that flood protection features with small available physical margin (APM) received appropriate interim actions when the consequences of flooding were significant. In response to the NRC RAI, the licensee prepared Request for Engineering Review (RER) SNC425759 on November 17, 2014, noting "There exist piping and conduit penetrations in the Units 1 and 2 auxiliary building access hatches that connect the auxiliary buildings and the condensate pipe trenches. Since the trenches are not sealed watertight near grade level, it is considered that the trench could flood and thus the access hatch penetrations have been investigated for APM. These penetrations are below grade, but are included in this response to the RER since there is no evidence

that these were walked down as part of the original 2.3 flooding walkdown efforts in 2012.” The RER noted that there was cementitious grout sealing around the outside of the electrical conduits at the concrete wall penetrations between the trench and the auxiliary building. It did not evaluate the potential for missing internal conduit seals or the condition of the external conduit covers for these conduits that are below the design basis flood protection elevation. The inspectors determined that the licensee missed two opportunities to conduct a walkdown of the condensate pipe trench to identify any deficiencies associated with the flood protection design basis.

During an engineering inspection of the Unit 1 Condensate Pipe Trench on September 13, 2016, the licensee discovered eleven conduit covers missing from the electrical conduits in the trench and documented the discovery on CR 10273516. The licensee completed the installation of eleven missing conduit covers on November 15, 2016. Without the conduit covers and without sufficient evidence of internal conduit seals, flooding of the trench would have the potential to introduce water into the conduits and into the Auxiliary Building Lower Equipment Room. The inspectors traced the 3” diameter conduits to 600V motor control center 1E, which is in a common area of the lower equipment room near the turbine driven auxiliary feedwater (TDAFW) pump room. The TDAFW Pump control panel is mounted very close to the floor, and more than 6” of water could render the TDAFW Pump inoperable. The Lower Equipment Room is provided with a pair of 100 gallon per minute (gpm) sump pumps. The sump pumps discharge to a common 3” diameter header to the 10,000 gallon capacity floor drain tank. While the sump pumps would help mitigate the internal flooding of the Lower Equipment Room, the potential existed to impact the availability, reliability and capability of the TDAFW pump.

Analysis: The inspectors determined that the failure to identify missing conduit covers in electrical conduits that penetrate the Unit 1 auxiliary building below the flood protection design basis elevation of 154.5 feet was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events. Specifically, flood water could enter the Auxiliary Building Lower Equipment Room through unsealed electrical conduits and render the TDAFW Pump inoperable.

In accordance with IMC 0609.04, “Initial Characterization of Findings,” and Exhibit 2 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power,” issued June 19, 2012, the inspectors utilized Section B, “External Event Mitigation Systems (Seismic/Fire/Flood/Severe Weather Degraded),” and Exhibit 4 of Appendix A and determined the finding did not involve a total loss of any safety function, identified through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The two motor driven AFW pumps are also located in the lower equipment room but are protected behind watertight doors and can satisfy the AFW safety function. Therefore, the finding screened to Green. The inspectors determined the finding had a cross-cutting aspect of “procedures” in the human performance area because the licensee missed two opportunities to follow the NEI 12-07 guidance to evaluate the adequacy of the flood protection features below the design basis flood protection elevation. (H.8)

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," required, in part, that measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, Farley Nuclear Plant, failed to identify missing conduit covers in electrical conduits that penetrate the Unit 1 auxiliary building during flooding walkdowns performed in response to the NRC's "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force (NTTF) Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340). The discovery of the missing conduit covers was captured in the licensee's corrective action program with CR 10273516. The licensee implemented WO SNC815778 to replace missing conduit covers. Corrective actions to inspect the remaining below grade pipe tranches are being developed and scheduled. Because this finding is of very low safety significance and has been entered into the corrective action program, this violation was treated as an NCV, consistent with the NRC Enforcement Policy. NCV 05000348/2016004-02, "Failure to Identify Flood Protection Deficiencies."

4OA3 Follow-up of Events (71153)

.1 Unit 1 Automatic Reactor Trip and Safety Injection on October 1, 2016

a. Inspection Scope

The inspectors responded to the main control room following notification of the Unit 1 automatic reactor trip and safety injection actuation that occurred on October 1, 2016. The cause of the reactor trip was due to a turbine trip caused by the closure of the 1A inboard MSIV, 3369A. All ESF equipment operated as expected during the trip and safety injection. The plant was stable in Mode 3 following the trip with no major equipment malfunctions. The inspectors discussed the preliminary cause(s) of the trip, the potential causes of the MSIV failure and the operator response before, during and after the event. This documents the inspector's initial response to the event. The NRC will conduct an additional review of licensee event report (LER) and the circumstances associated with this event at a later time.

b. Findings

Introduction: A Green self-revealing NCV of Technical Specification 5.4, "Procedures," was identified on October 1, 2016, when the Unit 1 operations shift crew failed to comply with annunciator response procedure FNP-1-ARP-1.9, Ver. 50 for the "JC4" annunciator. Conditions were met to trip the reactor, but the operations shift crew failed to do so. As a result, approximately 35 minutes later, MSIV 3369 closed which resulted in an automatic reactor trip and safety injection.

Description: At approximately 0435 on October 1, 2016, annunciator JC4, "MS LINE ISO VLV AIR PRESS LO" alarmed in the Unit 1 main control room (MCR). This alerted the operators to a degraded condition associated with the air supply to one of the MSIVs. The MSIVs use air actuators to open and maintain the open position of the

MSIVs. According to the MCR logs, dual valve position indication of MSIV 3369A was observed in the Unit 1 MCR at approximately the same time as the JC4 annunciator. The operators reviewed the proper annunciator response procedure (ARP) for the JC4 annunciator, FNP-1-ARP-1.9, "Main Control Panel Annunciator Panel J" Ver. 50. This ARP is marked safety related. Step 2 under the "Operator Action" section required, "IF any MSIV has changed from open to dual indication, THEN trip the reactor and perform the actions required by FNP-1-EEP-0, REACTOR TRIP OR SAFETY INJECTION". Contrary to this step, the operators did not initiate a manual reactor trip as required, but sent operators to validate the control room indications. The dual valve position indication seen in the MCR was confirmed by local observation of the valve position. It was also discovered that the test solenoid valve was allowing air to vent from the MSIV air actuator system. The operations shift manager and shift supervisor decided against tripping the reactor based on the probability of a trip causing the MSIV to fully close and the likelihood of isolating the air leak on the test solenoid. While preparing the clearance to isolate the leaking test solenoid, the MSIV continued to drift closed. Once enough of the MSIV disc entered the steam flow stream, MSIV 3369A closed rapidly which resulted in a turbine trip, a reactor trip and safety injection actuation. According to the licensee's root cause report (CAR 266911), manual actuation of the reactor trip prior to automatic closure of the MSIV would have prevented the safety injection from occurring.

Analysis: The failure of the operations shift crew to follow procedure FNP-1-ARP-1.9 as required was a performance deficiency (PD). The PD was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone objective and adversely affected that objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically a manual reactor trip of Unit 1 as required by the ARP, would have prevented the automatic reactor trip and the automatic safety injection actuation. The significance of this finding was evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for findings at Power," dated June 19, 2012. This finding was determined to be of very low safety significance (Green) because, while this issue resulted in a reactor trip, it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition. The inspectors determined the finding had a cross-cutting aspect of Procedure Adherence in the Human Performance area, because the ARP was not followed and the operations crew did not trip the reactor as required by the procedure. [H.8]

Enforcement: Technical Specifications 5.4.1.a required, in part, that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Section 5 of RG 1.33 Appendix A recommended procedures for abnormal, off-normal, or alarm conditions. Licensee procedure FNP-1-ARP-1.9, "Main Control Panel Annunciator Panel J" Ver. 50 is one of many ARPs used to comply with Section 5 of RG 1.33. This ARP is marked safety related. Contrary to the above, on October 1, 2016, operations staff failed to implement the requirements of this ARP and trip the Unit 1 reactor as required. This event was captured in the licensee's corrective action program with condition report (CR) 10280729. The licensee established a root cause evaluation team, identified the root causes, and implemented corrective actions (CAR 266911). Because this finding is of very low safety significance and has been entered into the corrective action program, this violation was treated as an NCV, consistent with the Enforcement Policy. NCV

05000348/2016004-03 "Failure to Follow Procedure Resulted in Automatic Reactor Trip and Safety Injection."

.2 Unit 1 Alert Emergency Declaration due to Ammonia Leak

a. Inspection Scope

The inspectors responded to the plant following notification of an Alert Emergency declaration on November 1, 2016. The Alert was declared due to an Ammonia leak in the Unit 1 Auxiliary Building that was considered to exceed the Immediately Dangerous to Life and Health (IDLH) Threshold Limit Value (TLV). The inspectors observed the activities and impacts on both units in the main control room and followed the licensee's actions in the technical support center (TSC). The inspectors discussed the event with licensee plant staff and reviewed the event notification reports associated with this event. This documents the inspector's initial response to the event. The NRC will conduct an additional review of licensee event report (LER) and the circumstances associated with this event at a later time.

b. Findings

No findings were identified.

.3 Unit 1 Manual Reactor Trip on November 8, 2016

a. Inspection Scope

The inspectors responded to the main control room following a Unit 1 reactor trip on November 8, 2016. The cause of the trip was a manual trip by the operator at the controls (OATC) due to lowering steam generator water levels. The plant was reducing power to take the main generator offline to repair a water leak in the main generator hydrogen cooler. During the load reduction, as the 1A Steam Generator Feedwater Pump (SGFP) recirculation valves were opened, the speed controllers associated with the 1A SGFP were unresponsive. A manual reactor trip was performed from approximately 32 percent RTP. The plant was stable in Mode 3 following the trip with no major equipment malfunctions. The inspectors discussed the cause of the trip, the potential causes of the 1A SGFP speed controller failure and the operator response before, during and after the event. This documents the inspector's initial response to the event. The NRC will conduct an additional review of licensee event report (LER) and the circumstances associated with this event at a later time.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction 2515/190, "Inspection of Proposed Interim Actions Associated with Near-Term Task Force (NTTF) Recommendation 2.1 Flooding Hazard Evaluations"

a. Inspection Scope

The Inspectors verified that the licensee's submitted interim actions, associated with the NTTF recommendation 2.1 for flooding hazard evaluations, will perform their intended function for flooding mitigation.

The inspectors independently verified that the licensee's proposed interim actions will perform their intended function for flooding mitigation, as follows:

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.
- Reasonable simulation, if applicable to the site.
- Flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspectors verified that issues identified were entered into the licensee's corrective action program. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Operation of an Independent Spent Fuel Storage Installation (ISFSI) (60855.1)

a. Inspection Scope

The inspectors performed a walkdown of the onsite ISFSI on December 30, 2016. The inspectors also reviewed surveillance records to verify that daily surveillance requirements were performed as required by technical specifications.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 23, 2017, the resident inspectors presented the inspection results to Dennis Madison and Scott Briggs and other members of the licensee's staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the

licensee and was a violation of NRC requirements which met the criteria of the NRC Enforcement Policy, for being dispositioned as a Non-Cited Violation.

- 10 CFR 20.1501(a)(2) requires, in part, that licensees make surveys to evaluate the magnitude and extent of radiation levels and quantities of radioactive material. 10 CFR 20.1501(b) requires that the licensee shall ensure that instruments and equipment used for quantitative radiation measurements be calibrated periodically for the radiation measured. Contrary to this, on June 2, 2016, the licensee discovered that the surveillance procedure used to calibrate N1D21RE0001 and N2D21RE0001B (MCR Area Monitors) had been deleted and the monitors had not been calibrated for approximately six years. This condition was documented in CR 10231300. Upon re-calibration of N1D21RE0001, the low voltage power supply was found out of tolerance (CR 10256497), indicating that the radiation monitor might not have been able to perform its function of alerting MCR operators of changing radiological conditions. This condition was evaluated using IMC 0609, Appendix C, Occupational Radiation Safety SDP, and determined to be of very low safety significance (Green) because the finding is not related to ALARA dose planning, did not result in an overexposure or the substantial potential for overexposure, and the ability to assess dose was not compromised due to the use of appropriate personnel dosimetry.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

S. Briggs, Plant Manager
D. Brown, NDE Lead
J. Carroll, Shift Operations Manager
S. Champion, ISI/Alloy 600/Vessel Upper Head Program Site Owner
J. Collier, Site Licensing
V. Flowers, Performance Improvement Supervisor
B. Freeman, Engineering Supervisor
S. Henry, Work Management Director
J. Horn, Operations Director
R. Hruby, Engineering Director
K. King, Boric Acid Corrosion Control Program Engineer
N. Koteel, Operations Support Manager
D. Madison, Site Vice President
D. Simmons, EP Supervisor
R. Still, Acting Radiation Protection (RP) Manager
J. Swenson, Site Welding Engineer
B. Taylor, Regulatory Affairs Manager
S. Taylor, Southern Co. RP Corp. Function Area Manager
E. Williford, Licensing Supervisor

LIST OF REPORT ITEMS

Opened and Closed

NCV 05000348/2016004-01	Failure to Adequately Install an Oil Collection System on Reactor Coolant Pump Motors (Section 1R05)
NCV 05000348/2016004-02	Failure to Perform Adequate NTTF Flooding Walkdowns (Section 4OA2.3)
NCV 05000348/2016004-03	Failure to Follow Procedure Resulted in Automatic Reactor Trip and Safety Injection (Section 4OA3.1)

Closed

Temporary Instruction 2515/190	Inspection of Proposed Interim Actions Associated with Near-Term Task Force (NTTF) Recommendation 2.1 Flooding Hazard Evaluations (Section 4OA5.1)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures:

FNP-0-AOP-21.0, Severe Weather, Rev. 41.1

FNP-1-ARP-1.1, Annunciator Response Procedure Main Control Board Annunciator Panel A,
Ver. 56

NMP-OS-017, Severe Weather, Ver. 1.1

Work Orders:

SNC612941

SNC94272

SNC909887

SNC91690

S081226501

Section 1R04: Equipment Alignment

Drawings:

D-175007, Ver. 35

D-205007, Ver. 29

Procedures:

FNP-2-SOP-22.0, Ver. 77

FNP-2-SOP-22.0A, Ver. 13

FNP-1-SOP-22.0A, Ver. 18

Condition Reports:

CR 10295811

Section 1R05: Fire Protection Annual/Quarterly

Documents:

U258242, Instruction Manual – Controlled Leakage Seal Reactor Coolant Pump, Ver. 12.0

LCO 1-2016-0164

LCO 1-2016-0159

Procedures:

FNP-1-FPP-3.0, Unit 1 Containment Pre-Fire Plan, Ver. 1

FNP-1-FPP-1.0, Unit 1 Auxiliary Building Pre-Fire Plan, Ver. 1

FNP-2-FPP-1.0, Unit 2 Auxiliary Building Pre-Fire Plan, Ver. 1

Drawings:

D356849, Ver. 1

D513642, Ver. 1

Condition Reports:

CR 10289565

CR 10258543

CR 10254353

CR 10213907

CR 10161364

Section 1R08: Inservice Inspection ActivitiesProcedures:

Boric Acid Corrosion Control Program (BACCP) Focused Area Self-Assessment, dated 5/19-21/2015

NMP-ES-019, Boric Acid Corrosion Control Program, Ver. 11.0

NMP-ES-024-301, Liquid Penetrant Examination Color Contrast and Fluorescent, Ver. 12.0

NMP-ES-029-GL01, Alloy 600 Program Management, Ver. 8.1

SNC817876, Work Order: "Through-Wall Leak on Service Water Piping; Replace Piping During 1R27," dated 10/11/2016

NDE Examiner Quals:

Sonic Systems International, Inc. Certificate of Qualification: PDI-II/UT (Shaugabay), dated 8-10-16

Sonic Systems International, Inc. Certificate of Qualification: PT (Pace), dated 6/14/16

Sonic Systems International, Inc. Vision Acuity Record (Pace), dated 7/16/2016

Sonic Systems International, Inc. Vision Acuity Record (Shaugabay), dated 7/2/2016

Welder Qualification Test Record: GTAW/SMAW (Bumpus), dated 3/2/15

Welder Qualification Test Record: GTAW/SMAW (Burton), dated 12/2/15

Miscellaneous Documents:

Curtis Industries, Inc. Certificate of Compliance (UT Calibration Block S/N 30012871), dated February 21, 2014

Exelon PowerLabs Certificate of Calibration (IR Thermometer S/N 27280569), dated 8/1/2016

F1 ALA1-4301-5-RB, Component Summary: UT, dated 10-12-16

Krautkramer Transducer Certificate of Conformity (UT Device, S/N B010804), dated 2/27/2003

Magnaflux Certificate of Certification (Spotcheck Developer, SKD-S2), dated 6/16/2015

Magnaflux Certificate of Certification (Spotcheck Penetrant, SKL-SP2), dated 5/14/14

Magnaflux Certificate of Certification (Ultrigel II Couplant), dated 05/07/2015

S16F1P003, Liquid Penetrant Examination Report (ALA1-1300-35R-L), dated 10/12/2016

S16F1P004, Liquid Penetrant Examination Report (ALA1-1300-40R), dated 10/12/2016

Condition Reports:

10048562, 10064616, 10075988, 10112222, 10150442, 10175510, 10212959, 10270972, 10277596, 10283790, 888872

Drawings:

A-351192, B13 – Reactor Coolant Loop 2, Rev. 2

Section 1R11: Licensed Operator Regualification ProgramDocuments:

F-LT-SG-100, Standards Just in Time Training (JITT) Scenario Guide, October 16, 2016

Procedures:

NMP-TR-416, Licensed Operator Continuing Training Program Administration, Ver. 6

NMP-OS-007, Conduct of Operations, Ver. 12

NMP-OS-007-001, Conduct of Operations Standards and Expectations, Ver. 14.4

Section 1R12: Maintenance EffectivenessWork Orders:

SNC641245, 818652, 818741

Procedures:

NMP-ES-027, Ver. 5
 NMP-ES-027-001, Ver. 7
 NMP-ES-006-002, Ver. 5
 NMP-ES-006-004, Ver. 2
 NMP-ES-006-001, Ver. 3.2
 NMP-ES-006, Ver. 9
 NMP-ES-005, Ver. 15
 NMP-ES-074, Ver. 2.1
 NMP-ES-001, Ver. 9.3
 NMP-ES-006-F01, Ver. 4.1

Condition Reports:

CRs 10298281, 10280132, 10280582
 CAR 267028

Section 1R13: Maintenance Risk Assessments and Emergent Work EvaluationProcedures:

NMP-GM-031-001, Online Maintenance Rule (a)(4) Risk Calculations, Ver. 3.0
 NMP-DP-001, Operational Risk Awareness, Ver. 14.3
 NMP-OS-010, Protected Train/Division and Protected Equipment Program, Ver. 7.2

Documents:

Unit 1 Operator's EOOS Risk Report, 11/17/2016

Section 1R15: Operability Determinations and Functionality AssessmentsDocuments:

Work Order (WO) SNC729632
 Operability Determination (OD) 05-02, Rev. 0 and Rev. 1
 RER C051901401-001, July 8, 2005
 RER C051901401-002, Aug. 30, 2005
 CRs 10289435, 10289450

Procedures:

NMP-AD-012, Operability Determinations and Functionality Assessments, Ver. 13
 FNP-1-ARP-1.6, Annunciator Response Procedure for Main Control Board Ann. Panel F, Ver. 77
 FNP-1-AOP-27, Emergency Boration, Ver. 17.1
 FNP-1-STP-228.1, Nuclear Instrumentation System Source Range Channel N31 Calibration and Operational Test, Ver. 35
 FNP-2-ARP-1.10, Ver. 71
 FNP-2-STP-22.16, Ver. 68

Section 1R18: Plant ModificationsDrawings:

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:

FNP-1-ARP-1.3, Annunciator Response Procedure, Main Control Board Ann. Panel C, Ver. 33.1
 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 SNC801108, SNC820769, SNC821047, SNC821066
 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
 DOEJ-FXSNC821047-S001, Weight Addition for Clamp/Enclosure on Spent Fuel Pool Cooling 1” Valve Q1G31V017, Ver. 3.0
 DOEJ-FXSNC821047-S002, Code Reconciliation for Pipe Clamp and Tie-Back Restraint – Farley Unit 1 Spent Fuel Pool Cooling 1” Valve Q1G31V017, Ver. 1.0
 DOEJ-FXSNC821047-C001, Qualification of Tie-Back Support for Seismic Loads, Ver. 1.0
 DOEJ-FRSNC806754-S003, Stress Evaluation of 1” HCC-110 Spent Fuel Pool System Cooling System Piping (Farley Unit 1), Ver. 1.0
 NMP-ES-050-F01, RER Response Form SNC806754, Sequence No. 03, Flaw Evaluation of 1” HCC-110 Spent Fuel Pool Cooling Weld
 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-024-202, Visual leakage Examination Report (VT-2) dated November 12, 2016
 Form NIS-2 Owner’s Report For Repair/Replacement Activity, dated November 12, 2016
 CRs 10289906, 10286643, 10284838

Section 1R19: Post Maintenance Testing

Condition Reports:

CR 10289320
 CR 10286062
 CR 10286017
 CR 10257879
 CR 10285975
 CR 10288590

CR 10288918
CR 10289314

Procedures:

NMP-ES-051-002, Tan Delta Testing, Ver. 9
FNP-1-STP-905.0, Auxiliary Building Battery Inspection (Q1R42E002A and Q1R42E002B), Ver 19
FNP-1-STP-905.5, Auxiliary Building Battery Modify Performance Test, Ver. 7
FNP-1-STP-905.4, Auxiliary Building Battery Quarterly Verification (Q1R42E002A and Q1R42E002B), Ver 23
FNP-1-EMP-1341.08, Auxiliary Building Battery Equalization, Ver. 11

Work Orders:

SNC565615
SNC821352
SNC655785
SNC431387
SNC821696
SNC821711

Drawings:

D-172100
D-177144

Section 1R20: Refueling and Other Outage Activities

Procedures:

FNP-1-SOP-1.6, Draining the Reactor Coolant System, Ver. 67.0
FNP-0-STP-610.0, Equipment Hatch Emergency Closure Response Verification, Ver. 12.1
FNP-1-STP-35.0, Reactor Coolant System Pressure and Temperature/Pressurizer Temperature Limits Verifications, Ver. 23
FNP-0-UOP-4.0, General Outage Operations Guidance, Ver. 53
FNP-1-UOP-4.1, Controlling Procedure for Refueling, Vers. 65 and 66
NMP-OM-001, Refueling Outage Management, Ver. 9.5
FNP-1-FHP-1.0, Refueling Operations, Ver. 13
FNP-0-FHP-7.0, Limitations and Precautions for Handling Fuel Assemblies, Ver. 25
FNP-1-STP-107, SFP and MPC Fuel Assembly Storage Verification, Ver. 23
NMP-RE-007, Core Verification, Ver. 3
FNP-1-UOP-1.1, Startup of Unit From Cold shutdown to Hot Standby, Ver. 106
FNP-1-STP-29.6, Calculation of Estimated Critical Condition, Ver. 16.1
NMP-RE-019, BEACON 7 Estimated Critical Condition Calculations, Ver. 1
FNP-1-UOP-2.4, Planned Reactor Shutdown and Cooldown to Cold Shutdown, Ver. 21
FNP-1-STP-101.0, Ver. 25
FNP-0-STP-610, Ver. 12.1
FNP-1-STP-35.1, Ver. 50
NMP-AD-016-GL01, Guideline for using eSOMS PQ&S®, Ver. 6.1
NMP-AD-016, Fatigue Management Program, Ver. 9.0
NMP-AD-016-003, Scheduling and Calculating Work Hours, Ver. 8.0

Documents:

NMP-OM-001, Attachment 3, CTMT Closure Plan for UOP-4.0 DID Assessment, March 24, 2015
Outage Defense-In-Depth Assessments per FNP-UOP-4.0, Ver. 53 for Oct. 4, 5 & 10, 2016

Work Order: SNC406655

Tagout 1-DT-R27-E11-02012(001), Installation of Fire rated cables for RHR valve MOV8811A

Tagout 1-DT-R21-E11-02095, RHR Trains Loop Suction Interlock Removal DCP SNC368758

Tagout 1-DT-R27-E21-03100, 1A Charging Pump

2016-0055, Plant Review Board meeting agenda, October 20, 2016

2016-0057, Plant Review Board meeting agenda, October 21, 2016

2016-0060, Plant Review Board meeting agenda, October 25, 2016

DVD of Unit 1 Core Map for Cycle 28, performed on Oct. 19, 2016

Condition Reports:

10291754, 10291591, 10291220, 10291237, 10289679, 102189685, 10289001, 10287855,

10288934, 10288702, 10285340, 10286792, 10285438, 10283968

Drawings:

U-199291, Farley Unit 1 Crosby valve – Nozzle Type – Safety Relief, Ver. 1

Section 1R22: Surveillance Testing

Condition Reports:

10299288, 433674, 10289660, 10289699

Documents:

ASME OM Code-2001, Code for Operation and Maintenance of Nuclear Power Plants

Work Order SNC775832

OPS 62102I/52102I/40102C, Diesel Generators and Auxiliaries Lesson Plan, Ver. 33

Drawings:

D-175038 Sheet 3, Unit 1, P&ID – Safety Injection System (Containment Spray), Ver. 27

D-175038 Sheet 2, Unit 1, P&ID – Safety Injection System (Containment Spray), Ver. 23

D-175037 Sheet 2, Unit 1, P&ID – Reactor Coolant, Ver. 34

D-175039 Sheet 6, Unit 1, P&ID – Chemical and Volume Control System Ver. 27

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents and Manuals

NMP-HP-301, Airborne Radioactivity Sampling and Evaluation, Ver. 3.6

NMP-HP-300, Radiation and Contamination Surveys, Ver. 4.0

FNP-0-RCP-4, Refueling Survey, Ver. 19.0

NMP-HP-202, Radiological Controls for Highly Radioactive Objects, Ver. 2.1

FNP-0-RCP-29, Contamination Guidelines, Ver. 48.1

NMP-HP-404, Release of materials from the RCA and Protected Areas, Ver. 2.1

NMP-GM-002, Corrective Action Program, Ver. 14.0

Records and Data

Radiological Survey 117807, U1 Ctmt transfer canal, 10/3/16

Radiological Survey 117845, U1 Ctmt transfer canal, 10/4/16

Radiological Survey 117801, U1 Reactor Cavity, 10/3/16

Radiological Survey 117766, U1 Reactor Cavity, 10/3/16

Radiological Survey 116828, ISFSI, 8/28/16

Radiological Survey 108212, ISFSI, 9/8/15

Radiological Survey 117797, U1 105ft Containment, 10/3/16

Radiological Survey 118134, U1 A/B 121ft, 10/9/16

RWP 16-1467, Cleanout and Maintenance in the Rx Cavity Transfer Canal, Rev. 0

RWP 16-1465, Upper Internals Lift and Set, Rev. 0
 Sample ID 173677, Charcoal and Particulate Air Sample Gamma Spectroscopy Results, U1 Equip Hatch, 10/4/16
 Sample ID 173660, Charcoal and Particulate Air Sample Gamma Spectroscopy Results, U1 Ctmt Transfer Canal, 10/4/16
 Sample ID 173695, Charcoal and Particulate Air Sample Gamma Spectroscopy Results, U1 Ctmt Transfer Canal, 10/5/16
 Sample ID 173657, Alpha Air Sample Calculation Sheet, U1 Ctmt Transfer Canal, 10/6/16
 Sample ID 171226, Alpha Air Sample Calculation Sheet, U1 Ctmt Transfer Canal, 8/23/16
 National Source Tracking System Annual Inventory Reconciliation Report, 1/25/16
 FNP-0-STP-800, Sealed Source Contamination Determination, Ver. 20.2, Attachment 1, Leak Test Results Sheet, 8/22/16
 FNP-0-STP-800, Sealed Source Contamination Determination, Ver. 20.1, Attachment 1, Leak Test Results Sheet, 2/26/16
 Check-In Self-Assessment (CISA) Plan and Report, NRC RP Occupational Baseline Inspection, 8/22/16 – 9/15/16
 CRs 10117864, 10057051, 10205815, 10204351, 10121391

Section 2RS2: ALARA

Procedures, Guidance Documents, and Manuals:

NMP-HP-204, ALARA Planning and Job Review Version 4.6
 NMP-HP-206, Issuance Use and Control of Radiation Work Permits, Version 4.0
 NMP-AD-035-001, Departmental Dose Champion Instruction, Ver. 1.0
 NMP-AD-041, Cobalt Reduction Program, Ver. 1.0
 NMP-AD-041-001, Cobalt Reduction for Valves, Ver. 1.0
 NMP-AD-041-002, Valve Maintenance for Cobalt Reduction, Ver. 1.0

Records and Data:

Farley Nuclear Plant 2015 Annual Report
 1R26 Outage Report
 2R24 Outage Report
 PARC Outage Preview 1R27, 09/14/2016
 PARC Outage Preview 1R27, 10/05/2016
 RWP Logbook Entries, 12/10/2015 – 07/15/2016
 Southern Nuclear Operating Strategic Plan for Radiation Reduction 2015-2020
 Various Plant ALARA Review Committee (PARC) Minutes for 2015 & 2016
 ALARA Packages non-complete, 16-1785, 16-1742, 16-1461 and 16-1705
 ALARA Packages complete, 15-1444, 15-1433, 15-1461, 15-1465, 15-1467 and 15-1705
 Temporary Shielding Evaluations for A, B, and C RCP cubicles, Rx Head Stand, PZR cubicle and Regen Heat Exchanger for 1R27
 HP Form 298 – Pre-Job Briefing Record – U1 Xfer Canal Blind Flange, 10/05/2016

Condition Reports:

10048354, 10121578, 10057430, 10057203, 10061692, 10069455, 10075868, 10079771, 10143978

Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals

NMP-HP-514, Operation of the 3M Airmate Hood and PAPR Blower Unit, Ver. 1.1
 NMP-HP-501-001, Instruction for Selection and Use of Respiratory Protection Equipment for Radiological Protection, Ver. 1.2

NMP-HP-204, ALARA Planning and Job Review, Ver. 4.7
 NMP-GM-002, Corrective Action Program, Ver. 14.0

Records and Data

NMP-HP-501-004, Inspection, Repair and Storage of Self-Contained Breathing Apparatus, Ver. 1.2, Data Sheets 1, 2, 3, August 2016
 NMP-HP-501-003, Inspection, Repair and Storage of Non-SCBA Respiratory Protection Equipment, Ver. 1.1, Data Sheet 1, August 2016
 Posi3 USB Complete SCBA Test, S/N GX335485, 11/5/15
 Posi3 USB Complete SCBA Test, S/N GX334439, 11/4/15
 Posi3 USB Complete SCBA Test, S/N GX334439, 11/12/14
 Posi3 USB Complete SCBA Test, S/N GX335485, 11/13/14
 HEPA Unit Test Data, HEPA ID HP-NPU-002/8662, 3/9/16
 HP Form 670A, Respirator Use ALARA Evaluation, RWP 16-2467, 5/1/16
 HP Form 670A, Respirator Use ALARA Evaluation, RWP 15-1805, 4/28/15
 NMP-HP-204, ALARA Planning and Job Review, Ver. 4.2, Form 8 – Respirator Use Evaluation Worksheet, 5/1/16
 NMP-HP-204, ALARA Planning and Job Review, Ver. 4.2, Form 8 – Respirator Use Evaluation Worksheet, 4/28/15
 Air/Gas Quality Report and Certificate, Ingersoll-Rand, 3/28/16
 Air/Gas Quality Report and Certificate, Ingersoll-Rand, 8/10/15
 Radiological Survey 117587, HP Form 531 Service Air Analysis Sheet, 9/29/16
 Grade D Air Analysis Certificate, Hagemeyer Pelham, 7/12/16
 Qualifications and Curriculum list, Respirator Qual – Fire Hawk SCBA/Rubber Harness, Operations Department
 Qualifications and Curriculum list, Respirator Qual – Fire Hawk SCBA/Rubber Harness, Health Physics Department
 Check-In Self-Assessment (CISA) Plan and Report, NRC RP Occupational Baseline Inspection, 8/22/16 – 9/15/16

Condition Reports:

10271590, 10272105, 10220260, 10161275

Section 2RS4: Occupational Dose Assessment

Procedures, Guidance Documents, and Manuals:

NMP-HP-100, Bioassay Program, Ver. 1.2
 NMP-HP-101, In-Vivo Bioassay and Internal Dose Assessment, Ver. 3.1
 NMP-HP-102, In-Vitro Bioassay, Ver. 1.1
 NMP-HP-104, Use and Calibration of Whole Body Counters, Ver. 2.1
 NMP-HP-105, Comparison of OSLD and ED Dosimetry Results, Ver. 1.2
 NMP-HP-108, Issuance, Use, and Collection of Personnel Dosimetry, Ver. 2.4
 NMP-HP-201, Personnel Dosimetry Program, Ver. 2.0

Records and Data:

NAVLAP Lab Code 100551-0, Certificate of Accreditation to ISO/IEC 17025:2005, Dated 04/01/2016
 OSLD to ED Comparison, Dated, 01/01/2016 to 07/01/2016
 Technical Support Document No. 16-020, Neutron Dosimetry Evaluation at Joseph M. Farley Electric Generating Plant, Rev. 0
 Plant Farley Health Physics Work Plan for PZR heater work, 10/30/2014
 Plant Farley Health Physics Work Plan for Diving Operations, 04/08/2016

Plant Farley Radiation Protection Work Plan for Change Out of U1 NI-32, 04/15/2015
 Survey #117998, U1 Rx Head (1CB), 10/07/2016
 Survey #118143, U1 Rx Head (1CB), 10/09/2016
 Survey #117896, U1 Ctmt Transfer Canal (1CB155), 10/05/2016

Condition Reports:

10086646, 10105147, 10161275, 10180273, 10220260, 10216759, 10285589, 10216759,
 10056713

Section 2RS5: Radiation Monitoring Instrumentation

Procedures and Guidance Documents:

FNP-0-SOP-56.0, "Control Room HVAC System", Ver. 57.0
 FNP-0-RCP-0, "General Guidance and Special Instructions to Radiation Protection Personnel",
 Ver. 68.3
 FNP-0-RCP-73, "Operation of the Shephard Model 149 Neutron Source Calibrator", Ver. 3.0
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