



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

August 1, 2013

Mr. T. A. Lynch  
Vice President  
Southern Nuclear Operating Company, Inc.  
Joseph M. Farley Nuclear Plant  
P.O. Drawer 470, BIN B500  
Ashford, AL 36312

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT - NRC INTEGRATED INSPECTION  
REPORT 05000348/2013003; AND 05000364/2013003**

Dear Mr. Lynch:

On June 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Joseph M. Farley Nuclear Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on July 8, 2013, with you and members of your staff.

The inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

A self-revealing finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve a violation of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Joseph M. Farley Nuclear Plant.

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 Joseph M. Farley Nuclear Plant.

T. Lynch

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be available electronically for public inspection in the NRC public document room or from the publicly available records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the public electronic reading room).

Sincerely,

**/RA/**

Frank Ehrhardt, Chief  
Reactor Projects Branch 2  
Division of Reactor Projects

Docket Nos.: 50-348, 50-364  
License No.: NPF-2, NPF-8

Enclosure: Inspection Report 05000348/2013003; and 05000364/2013003  
w/Attachment: Supplemental Information

cc w/encl.: (See page 3)

T. Lynch

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*/RA/*

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cc w/encl.: (See page 3)

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(cc w/encl continued next page)

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T. Lynch

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Letter to T. A. Lynch from Frank Ehrhardt dated August 1, 2013

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT - NRC INTEGRATED INSPECTION  
REPORT 05000348/2013003; AND 05000364/2013003

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 05000348, 05000364

License Nos.: NPF-2, NPF-8

Report No.: 05000348/2013003; and 05000364/2013003

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Joseph M. Farley Nuclear Plant, Units 1 and 2

Location: Columbia, AL

Dates: April 1, 2013 through June 30, 2013

Inspectors: J. Sowa, Senior Resident Inspector (Acting)  
T. Lighty, Resident Inspector (Acting)  
P. Niebaum, Senior Resident Inspector  
L. Butcavage, Reactor Inspector (Section 4OA2)  
B. Collins, Reactor Inspector (Section 4OA2)  
M. Coursey, Reactor Inspector (Section 1R08)  
W. Loo, Senior Health Physics Inspector (Section 2RS8)  
W. Pursley, Health Physics Inspector (Section 2RS1)

Approved by: Frank Ehrhardt, Chief  
Reactor Projects Branch 2  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000348/2013003; and 05000364/2013003; April 1, 2013, through June 30, 2013; Joseph M. Farley Nuclear Plant, Units 1 and 2, Refueling and Other Outage Activities

The report covered a three-month period of inspection by resident and regional inspectors. There was one self-revealing violation identified and 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 June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" revision 4.

### Cornerstone: Initiating Events

Green. A self-revealing non-cited violation (NCV) of Technical Specification (TS) 5.4.1, "Procedures," was identified for the licensee's failure to establish procedures recommended in Regulatory Guide (RG) 1.33. Specifically, the licensee did not properly establish written procedures for maintaining a vent path of the unit 2 reactor vessel head. As a result of not maintaining a vent path during a refueling outage, the indicated reactor coolant system level did not match actual level and operator action was required to restore level to 128 feet, 6 inches. The licensee wrote condition report (CR) 632668 to document the event.

The failure to establish procedures to ensure an open vent path of the reactor vessel head when required was a performance deficiency. This performance deficiency was more than minor because it was associated with the procedural quality attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown operations. The procedure quality attribute of the initiating event (IE) cornerstone was determined to be adversely affected because procedure FNP-2-SOP-1.11, "Reactor Coolant System Filling and Venting – Dynamic Method," did not provide instructions to establish a reactor vessel vent path as required by procedure FNP-2-UOP-4.1, "Controlling Procedure for Refueling." This resulted in an unplanned RCS level decrease to 127 feet, 6 inches when the licensee was controlling level at 128 feet, 6 inches. The significance of this finding was screened using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process" and IMC 0609, Appendix G, Attachment 1: "Phase 1 Operational Checklists for both PWRs and BWRs." The finding screened as Green, because it did not require a quantitative assessment per checklist 3 of the attachment and it did not represent an inadvertent loss of two feet of RCS inventory when not in midloop as described in Table 1 of Appendix G.

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The finding was related to the cross-cutting aspect of human error prevention techniques (pre-job briefings) in the work practices component of the human performance area because the licensee failed to discuss the expected configuration of the reactor vessel head vent path to ensure a vent path was properly established as required [H.4(a)]. (Section 1R20)

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 number are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 started the report period at 100 percent rated thermal power (RTP). On June 11, an automatic reactor trip occurred due to the loss of the "1B" start-up transformer and subsequent trip of the "B" and "C" reactor coolant pumps. A reactor startup commenced on June 13. The unit returned to 100 percent RTP on June 14 and remained at 100 percent RTP through the end of the inspection period.

Unit 2 started the report period at approximately 77 percent RTP due to reactor coolant system temperature coast down for the scheduled refueling outage. The coast down continued to 65 percent RTP until the refueling outage began on April 14. A reactor startup commenced on May 8. The unit returned to 100 percent RTP on May 13 and remained at 100 percent RTP through the end of the inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection (71111.01)

##### a. Inspection Scope

##### .1 Offsite/Alternate AC Readiness

The inspectors reviewed the licensee's station procedures to verify communication protocols existed between the transmission operator and control room to promptly identify issues impacting the offsite power system. The inspectors verified procedures were adequate to monitor and maintain availability and reliability of the offsite alternating current (AC) power system (Alabama Power Company) and the onsite AC power system. The inspectors also reviewed the compensatory actions identified in station procedures to be performed when it is not possible to predict post-trip voltage at the site for current electrical grid conditions. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04)

##### a. Inspection Scope

##### Partial Walk-Down:

The inspectors verified that critical portions of selected risk-significant systems were correctly aligned. The inspectors selected systems for assessment because they were a redundant or backup system/train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors

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determined the correct system lineup by reviewing plant procedures and drawings. The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. Documents reviewed are listed in the Attachment. The inspectors selected the following three system/trains to inspect:

- Unit 2 residual heat removal (RHR) system
- Unit 1 component cooling water (CCW) system
- Unit 1 containment spray (CS) system

#### Complete Walkdown

The inspectors verified the alignment of the Unit 2 containment cooling system. The inspectors selected this system for assessment because it is a risk-significant mitigating system. The inspectors determined the correct system lineup by reviewing plant procedures, drawings, the updated final safety analysis report, and other documents. In order to identify any deficiencies that could affect the ability of the system to perform its function(s), the inspectors reviewed records related to outstanding design issues and maintenance work requests. The inspectors verified that the selected system was correctly aligned by performing a complete walk down of accessible components.

To verify the licensee was identifying and resolving equipment alignment discrepancies, the inspectors reviewed corrective action documents, including condition reports and outstanding work orders, as well as periodic reports containing information on the status of risk-significant systems, including maintenance rule reports and system health reports. Documents reviewed are listed in the Attachment.

#### b. Findings

No findings were identified.

### 1R05 Fire Protection (71111.05AQ)

#### Quarterly Inspection

#### a. Inspection Scope

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items: (1) control of transient combustibles and ignition sources, (2) fire detection systems, (3) water-based fire suppression systems, (4) gaseous fire suppression systems, (5) manual firefighting equipment and capability (6) passive fire protection features, (7) compensatory measures and fire watches, and (8) issues related to fire protection contained in the licensee's corrective action program. The inspectors toured the following four fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the Attachment.

- Unit 2, containment 155' elevation, fire zone 55
- Unit 2, RHR heat exchanger and pump rooms, fire zone 1
- Unit 1, CCW heat exchanger and pump room, fire zone 6
- Unit 1, CS pump rooms, fire zone 1

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

Underground Cables

a. Inspection Scope

The inspectors reviewed related flood analysis documents and inspected the area listed below containing cables whose failure could disable risk significant equipment. The inspector directly observed the condition of cables and cable support structures and, as applicable, verified that dewatering devices and drainage systems were functioning properly. In addition, the inspectors verified the licensee was identifying and properly addressing issues using their corrective action program. Documents reviewed are listed in the Attachment.

- Unit 2, B2M62/B2M63 pullboxes

b. Findings

No findings were identified.

1R08 Inservice Inspection (ISI) Activities (IP 71111.08P, Unit 2)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: From April 22, 2013, through April 26, 2013, the inspectors conducted an on-site review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the reactor coolant system, emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 2. The inspectors' activities included a review of non-destructive examinations (NDEs) to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 2001 Edition with Addenda 2003), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code Section XI acceptance standards.

The inspectors directly observed the following NDEs mandated by the ASME Code to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Ultrasonic examination (UT) of pressurizer (PZR) nozzle to safe end structural weld overlay (SWOL) for the PZR spray line
- UT of PZR nozzle to safe end SWOL for the PZR pressure relief line
- UT APR2-4500-37 high energy line break (HELB) pipe to pipe weld

The inspectors observed the welding activities referenced below and reviewed associated documents in order to evaluate compliance with procedures and the ASME Code. 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.

- Pressurizer auxiliary spray check valve seal weld
- Charging pump 2C suction line
- Replace carbon steel pipe and butterfly valve with stainless steel in motor driven auxiliary feedwater (MDAFW) pump room

The inspectors reviewed the following examination records (volumetric or surface) with recordable indications that were analytically evaluated and accepted for continued service against the ASME Code Section XI or an NRC-approved alternative.

- IER 004 – 2R21 Spalling, minor cracking and staining on the surface of the reactor pressure vessel (RPV) sump cavity liner

PWR Vessel Upper Head Penetration (VUHP) Inspection Activities: For the Unit 2 vessel head, a bare metal visual (BMV) examination and a volumetric examination were not required this outage in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D) as it was conducted last outage.

The inspectors reviewed the licensee's prior inspection reports and plan for inspections to ensure compliance with the requirements of ASME Code Case N-729-1.

Boric Acid Corrosion Control (BACC) Inspection Activities: The inspectors reviewed the licensee's BACC program activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and applicable industry guidance documents. Specifically, the inspectors performed an on-site record review of procedures and the results of the licensee's containment walkdown inspections performed during the current spring 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.

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The inspectors reviewed the following evaluations and 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 Section XI and 10 CFR Part 50, Appendix B, Criterion XVI.

- Unit 2 pressurizer auxiliary spray corrosion assessment
- Active leak from pipe cap of Q2E21V461 in VCT valve room
- Dry boric acid leakage from flange at Q2F16T0501 near RWST

Steam Generator (SG) Tube Inspection Activities: The NRC inspectors reviewed the following documentation and evaluated them against the licensee's technical specifications, commitments made to the NRC, ASME Section XI, and Nuclear Energy Institute (NEI) 97-06 (Steam Generator Program Guidelines), to ensure that the licensee was in compliance with the schedule to skip the SG eddy current testing inspections for the 2R22 outage:

- Self Assessment and Final Report, NMP-GM-003-F04, dated September 9, 2011

Identification and Resolution of Problems: The inspectors performed a review and sample of ISI-related problems that were identified by the licensee and entered into the corrective action program as CRs. The inspectors reviewed the CRs to confirm 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. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope:

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification:

The inspectors observed a simulator scenario conducted for training of an operating crew for requalification on May 29, 2013. The inspectors assessed licensed operator performance, the ability of the licensee to administer the scenario and evaluate the operators, the quality of any post-scenario critique, any follow-up actions taken by the facility licensee, and the performance of the simulator. Documents reviewed are listed in the Attachment.

.2 Resident Inspector Quarterly Review (Licensed Operator Performance):

The inspectors observed licensed operator performance in the main control room during a Unit 2 yellow risk condition on April 17, 2013. Inspectors observed licensed operator performance to assess 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

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the two issues listed below in order to verify the licensee appropriately addressed equipment problems within the scope of the Maintenance Rule (10 CFR 50.65). The inspectors reviewed procedures and records in order 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. Documents reviewed are listed in the Attachment.

- CR 596442: 2B CCW heat exchanger jacket relief valve failure
- CR 604230: RCS Flow Transmitter out of tolerance

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the four maintenance activities listed below to verify 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

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maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. The attachment lists documents reviewed.

- Unit 2, April 2, 2013, YELLOW risk condition while "2B" MDAFW pump out of service for planned maintenance
- Unit 1, April 3, 2013, YELLOW risk condition while "1A" spent fuel pool pump out of service for planned maintenance
- Unit 2, April 17, 2013, YELLOW risk condition while reactor coolant drained below the reactor vessel flange for vessel head removal
- Unit 2, April 29, 2013, YELLOW risk condition while reactor coolant drained below the reactor vessel flange for vessel head installation

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors selected the five 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. Documents reviewed are listed in the Attachment.

- CR 613013, Unit 2 loss of station power (LOSP) and emergency safeguards features (ESF) sequencer B2G terminals contain extra jumpers not shown on drawing
- CR 543504, "1B" service water (SW) pump has degraded flow
- CR 628612, Unit 2 "B" SW train header vacuum breaker degraded
- CR 635885, Solid state protection system (SSPS) A505 isolation card has failed outputs on circuit 4 and circuit 6
- CR 634424, Unit 2 turbine-driven auxiliary feedwater (TDAFW) uninterruptible power supply (UPS) 7.5kVA inverter not maintain synchronization when on bypass source

b. Findings

No findings were identified.



1R18 Plant Modifications (71111.18)a. Inspection Scope

The inspectors verified that the plant modification listed below did not affect the safety functions of important safety systems. The inspectors confirmed the modifications did not degrade the design bases, licensing bases and performance capability of risk significant structures, systems and components. The inspectors also verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition. Additionally, the inspectors 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. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications. Documents reviewed are listed in the Attachment.

Permanent Plant Modifications

- SNC86713, Unit 2 TDAFWP uninterruptible power supply (UPS) replacement

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 five 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. 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; and 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. Documents reviewed are listed in the Attachment.

- Q2N11V0011D, Main Steam Safety Valve Operational Test, following valve adjustment to 1 percent range after being high out of tolerance
- Q2N11V0010C, Main Steam Safety Valve Operational Test, following valve adjustment to within 1 percent range after being found in the 3 percent range
- FNP-2-STP-33.8, Verification of Steam Dump Arming From Reactor Trip (P-4) Signal and P-4 Contact Verification, following replacement of P-4 relay

- SNC434647 TDAFW UPS Battery Functional Test following replacement of Unit 2 TDAFW UPS Battery
- SNC434648 TDAFW UPS Functional Test following replacement of Unit 2 TDAFW UPS

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated the outage activities listed below for the Unit 2 refueling outage from April 14, 2013 through May 8, 2013. The inspectors verified that the licensee: 1) considered risk in developing the outage schedule 2) controlled plant configuration in accordance with administrative risk reduction methodologies, 3) developed work schedules to manage fatigue, 4) developed mitigation strategies for loss of key safety functions, and 5) adhered to operating license and technical specification requirements. Additionally, inspectors verified that safety-related and risk significant structures, systems, and components not accessible during power operations were maintained in an operable condition.

- Outage planning
- 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

Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A self-revealing NCV of TS 5.4.1, "Procedures," was identified for the licensee's failure to establish procedures recommended in RG 1.33. Specifically, the licensee did not properly establish written procedures for maintaining a vent path of the unit 2 reactor vessel head. As a result of not maintaining a vent path during a refueling outage, the indicated reactor coolant system level did not match actual level and operator action was required to restore level to 128 feet, 6 inches. The licensee wrote CR 632668 to document the event.

Description: On April 30, an operator was given the task to perform preparations for RCS fill and vent during a unit 2 refueling outage. The operator performed step 2.17 of procedure FNP-2-SOP-1.11, "Reactor Coolant System Filling and Venting - Dynamic

Method,” which instructed the individual to attach a vent hose assembly to the vent connection downstream of the reactor vessel manual vent valve (Q2B13V014A). The operator connected the vent hose between the reactor vessel head manual vent valve (Q2B13V014A) and the RCS vent rig manifold per the procedure, but a vent path was not established because the RCS vent rig manifold valves were left closed. Concurrent with fill and vent preparations, the operators were performing procedure FNP-2-UOP-4.1, “Controlling Procedure for Refueling.” Step 6.14 of FNP-2-UOP-4.1 required a reactor vessel vent path. A pre-job brief was conducted prior to performing fill and vent preparations but the proper vent alignment and desired configuration was not discussed. Additionally, the operator did not inform the control room that the vent hose was installed. This led the shift supervisor to believe the reactor head vent was vented.

On May 2, after observing slight indicated increases on both the RCS level hose and the volume control tank (VCT), the licensee identified the RCS vent rig valves were closed and disconnected the head vent hose from the vent rig to establish the vessel head vent path. The control room operators noted RCS level decreasing. In response, the operators increased charging and performed several makeups to the VCT in order to stabilize RCS level back to the desired level of 128 feet, 6 inches (approximately one foot below the reactor vessel flange). The licensee estimated they charged 900 gallons into the RCS to increase level. Based on this volume, the licensee calculated actual RCS level at its lowest point was 127 feet, 6 inches. This was approximately one foot lower than indicated level.

Analysis: The failure to establish procedures to ensure an open vent path of the reactor vessel head when required was a performance deficiency. This performance deficiency was more than minor because it was associated with the procedural quality attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown operations. The procedure quality attribute of the (IE) cornerstone was determined to be adversely affected because FNP-2-SOP-1.11, “Reactor Coolant System Filling and Venting – Dynamic Method,” did not provide instructions to establish a reactor vessel vent path as required by procedure FNP-2-UOP-4.1, “Controlling Procedure for Refueling.” This resulted in an unplanned RCS level decrease to 127 feet, 6 inches when the licensee was controlling level at 128 feet, 6 inches. The significance of this finding was screened using IMC 0609, Appendix G, “Shutdown Operations Significance Determination Process” dated February 28, 2012, and IMC 0609, Appendix G, Attachment 1: “Phase 1 Operational Checklists for both PWRs and BWRs” dated May 25, 2004. The finding screened as Green, because it did not require a quantitative assessment per checklist 3 of the attachment and it did not represent an inadvertent loss of two feet of RCS inventory when not in midloop as described in Table 1 of Appendix G. The finding was related to the cross-cutting aspect of human error prevention techniques (pre-job briefings) in the work practices component of the human performance area because the licensee failed to discuss the expected configuration of the reactor vessel head vent path to ensure a vent path was properly established as required. [H.4(a)]

Enforcement: TS 5.4.1, "Procedures," requires, in part, that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in RG 1.33. RG 1.33 Appendix A, Section 3, states that written procedures for filling and venting of the reactor coolant system are required. Licensee procedure FNP-2-SOP-1.11, "Reactor Coolant System Filling and Venting – Dynamic Method," contains the instructions for filling and venting of the reactor coolant system.

Contrary to the above, the licensee failed to establish adequate instructions within procedure FNP-2-SOP-1.11. Specifically, clear instructions were not documented to establish and maintain a vent path from the reactor vessel head to atmosphere. This resulted in an unplanned RCS level decrease to 127 feet, 6 inches when the licensee was controlling level at 128 feet, 6 inches on May 2, 2013. As corrective actions, the licensee established a vent path and increased the charging into the RCS to restore level to 128 feet, 6 inches. Because this violation was of very low safety significance and was entered into the licensee's corrective action program (CAP) as CR 632668, this violation is being treated as a NCV, consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000364/2013003-01, "Failure to Properly Maintain Procedures to Ensure Reactor Vessel Head Vent Path was Preserved.")

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the eleven surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met technical specification and licensee procedural requirements. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with surveillance testing.

Documents reviewed are listed in the Attachment.

Routine Surveillance Tests

- FNP-1-STP-16.12B, "1B" Containment Spray Automatic Starting Circuitry Test
- FNP-2-STP-33.2A, Unit 2 "A" Train Reactor Trip Breaker Operability Test
- FNP-2-STP-33.0A, Unit 2 Solid State Protection System Train "A" Operability Test
- FNP-2-STP-22.20, Unit 2 TDAFW Pump Steam Admission Valves Air Accumulator Test
- FNP-2-STP-22.32, Unit 2 Turbine Driven Auxiliary Feedwater Pump Comprehensive and Pre-Service Test
- FNP-2-STP-608.0, Unit 2 Main Steam Safety Valve Operational Test

Containment Isolation Valve

- FNP-2-STP-627, Local Leak Rate Testing of Containment Penetrations, Unit 2 Penetration 56
- FNP-2-STP-627, Local Leak Rate Testing of Containment Penetrations, Unit 2 Penetration 78

In-Service Tests (IST)

- FNP-1-STP-22.2, "1B" Auxiliary Feedwater Pump Quarterly Inservice Test

Reactor Coolant System (RCS) Leak Detection

- FNP-1-STP-9.0, RCS Leakage Test
- FNP-2-STP-9.0, RCS Leakage Test

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness (EP)

1EP6 Drill Evaluation (71114.06)a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on April 3, 2013. The inspectors observed licensee activities in the simulator and/or technical support center to evaluate implementation of the emergency plan, including event classification, notification, and protective action recommendations. The inspectors evaluated the licensee's performance against inspection 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. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

## 2. RADIATION SAFETY (RS)

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

## 2RS1 Radiological Hazard Assessment and Exposure Controls

### a. Inspection Scope

Hazard Assessment and Instructions to workers During facility tours, the inspectors observed labeling of radioactive material and postings for radiation areas, high radiation areas (HRAs), and contamination areas established within the radiologically controlled area (RCA) of the auxiliary building, unit 2 reactor containment building, radioactive waste (radwaste) processing and storage locations, and the Independent Spent Fuel Storage Installation. 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 alpha emitters, discrete radioactive particles, airborne radioactivity, gamma, and neutron surveys with a range of dose rate gradients, 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. For selected outage jobs, 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.

Hazard Control and Work Practices The inspectors evaluated access barrier effectiveness for selected Locked High Radiation Area (LHRA) locations. Changes to procedural guidance for LHRA and Very HRA controls were discussed with health physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool were reviewed and discussed in detail. Established radiological controls (including airborne controls) were evaluated for selected Unit 2 Refueling Outage 22 tasks including maintenance activities in the lower cavity, reactor head disassembly work, and work in the containment sump area. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Through direct observations and interviews with licensee staff, the inspectors evaluated occupational workers' adherence to selected RWPs and HP technician proficiency in providing job coverage. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for containment sump entry and lower cavity maintenance work. The use of personnel dosimetry (ED alarms, extremity dosimetry, multibadging in high dose rate gradients, etc.) was reviewed. Worker response to dose and dose rate alarms during selected work activities was also evaluated.

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 for release point survey instruments with licensee staff. The inspectors compared recent 10 Code of Federal Regulations (CFR) Part 61 results for the dry active waste (DAW) radioactive waste stream with radionuclides used in calibration sources to evaluate the

appropriateness and accuracy of release survey instrumentation. The inspectors also reviewed records of leak tests on selected sealed sources and reviewed the licensee's Nationally Source Tracking System source inventory confirmation.

Problem Identification and Resolution The inspectors reviewed and assessed corrective action program (CAP) documents associated with radiological hazard assessment and exposure 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.

Radiation protection activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; Technical Specifications 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." Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Radioactive Material Storage The inspectors walked down indoor and outdoor radioactive material storage areas that included the Unit 2 containment, auxiliary building, low level radioactive waste building, and old steam generator vaults. During the walk-downs, the inspectors observed the physical condition and labeling of several storage containers and the posting of radioactive material areas. The inspectors also reviewed the licensee's procedures for routine surveys and waste storage in order to evaluate the impact of long-term storage.

Radwaste System Walkdown, Characterization and Classification Selected liquid and solid radwaste processing system components were inspected for material condition and for configuration compliance with the UFSAR and process control program (PCP) in the auxiliary building and the solidification/dewatering facility. Inspected equipment included the recycle hold-up tanks; supplemental demineralizer system; resin transfer piping; resin and filter packaging components; and abandoned waste evaporator equipment. The inspectors discussed component function, equipment operability, and changes to radwaste processing systems with cognizant licensee staff as well as possible changes to the radwaste processing systems. The processes for the dewatering of resins, spent resin tank recirculation, resin sampling, and transfer of resins to the shipping casks and temporary storage casks were reviewed and discussed.

The inspectors reviewed the 2011 and 2012 radioactive effluent release report and the 2011 and 2012 radionuclide characterization and classification for the DAW and filter waste streams. The inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance comparison results between licensee waste stream characterizations and outside laboratory data. The inspectors also evaluated how changes to plant operational parameters were taken into account in waste characterization.

Shipment Preparation and Records The inspectors directly observed the preparation of shipments for reactor coolant pump motor oil samples and a "sealand" containing DAW for program compliance and interviewed the shipping technician for the purpose of assessing knowledge level of Department of Transportation (DOT) regulations. In addition, training records for selected individuals currently qualified to ship radioactive material were reviewed for compliance with 49 CFR Part 172 Subpart H.

Four shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. This included review of emergency response information, waste classification, radiation survey results, information on the waste manifest, and the authorization of the receiving licensee to receive shipments.

Problem Identification and Resolution The inspectors reviewed selected CAP documents in the area of radwaste and shipping, as well as the results of a self-assessment. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure NMP-GM-002, "Corrective Action Program," Ver. 12.0 and NMP-GM-002-001, "Corrective Action Program Instructions," Ver. 30.1.

Radioactive material and waste storage activities were reviewed against the requirements of 10 CFR Part 20. Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's PCP and UFSAR Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position on Waste Classification (1983). Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 71 (which requires licensees to comply with DOT regulations in 49 CFR Parts 107, 171-180, and 390-397), as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed are listed in the Attachment.

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 PIs listed below. To verify the accuracy and completeness of the data reported for the station, the inspectors reviewed plant records compiled between April, 2012, and April, 2013. The inspections verified that the PI data complied with guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," and licensee procedures. The inspectors also confirmed the PIs were calculated correctly. 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. Documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events

- Unplanned Scrams with Complications

Cornerstone: Mitigating Systems

- Heat Removal System
- Residual Heat Removal System (RHR)

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152).1 Routine Reviews

The inspectors performed a daily screening of 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 daily condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Annual Samples:a. Inspection Scope

The inspectors performed a detailed review of the following two CRs to verify the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. Additionally, the inspectors conducted interviews with licensee staff to those same ends. The inspectors evaluated

the actions taken as described in the CR against the licensee's corrective action program as delineated in licensee procedure NMP-GM-002, Corrective Action Program, and 10CFR50, Appendix B. Documents reviewed are listed in the Attachment.

- CR449030, Broken Loop Tendon, U-1 Horizontal Loop Tendon (127 elevation) appears to have broken
- CR585797, Safety Injection RCS Accumulators Nitrogen isolation procedures have incorrect setpoint

b. Findings and Observations

One licensee-identified violation (LIV) was dispositioned in Section 4OA7 of this report.

.3 Semi-Annual Trend Review:

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program and associated documents to identify trends which could indicate the existence of a more significant safety issue. The inspectors focused their review on instrumentation and calibration practices and instrumentation corrective maintenance issues, but also considered the results of inspector daily condition report screenings, licensee trending efforts, and licensee human performance results. The inspectors verified that condition reports were initiated for instrumentation that was out of tolerance (OOT). The inspectors also verified that maintenance rule functional failure evaluations were performed and corrective actions to calibrate or replace the OOT instrumentation were initiated or completed. The review nominally considered the six month period of January 1 through June 30, 2013 although some examples extended beyond those dates when the scope of the trend warranted. The inspectors compared their results with the results contained in the licensee's trend documents. 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 processed by the licensee to identify potential adverse trends in structures, systems, and/or components as evidenced by acceptance of long-standing non-conforming or degraded conditions. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA3 Followup of Events

The inspectors responded to the site after notification of a Unit 1 reactor trip on June 11, 2013. The direct cause of the trip was a loss of the "1B" startup transformer which resulted in the loss of the "B" and "C" reactor coolant pumps. The inspectors verified that all equipment responded as expected following the trip and operations staff entered and followed the appropriate procedures. The inspectors reviewed Event Notification Report 49106, the licensee's event recovery report and discussed the cause of the trip

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and associated corrective actions with licensee staff. Additionally, the inspectors observed the reactor startup on June 13 and subsequent power ascension to 100 percent RTP. Documents reviewed are listed in the Attachment.

#### 40A5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

###### b. Findings

No findings were identified.

#### 40A6 Meetings, Including Exit

The NRC presented the inspection results to Tom A. Lynch, Site Vice President and other members of the licensee's staff on July 8, 2013. The staff acknowledged the results. The NRC confirmed proprietary information was not provided or examined during the inspection.

#### 40A7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee, and is a violation of NRC requirements which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as a Non-Cited Violation.

- TS 5.4.1, "Procedures" states in part that written procedures shall be established, implemented, and maintained covering activities recommended in RG 1.33, Revision 2, Appendix A. RG 1.33, Appendix A, section 6a, requires procedures for loss of coolant emergencies. Contrary to the above, from August 27, 2012 to February 9, 2013, licensee procedures FNP-1/2-ECP-1.1, Loss of Emergency Coolant Recirculation, used a non-conservative value of 100 psig instead of the vendor recommended 160 psig as the lower limit during steam generator pressure reduction to allow the safety injection (SI) accumulators to inject to the RCS. At 100 psig, nitrogen gas could be injected into the RCS cold leg and inhibit natural recirculation. The licensee entered this condition into their CAP as CR 585797. The inspectors assessed the finding using IMC 0609 Attachment 4, and Appendix A, and determined that additional analysis by the regional senior reactor analyst (SRA) was

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required. The regional SRA performed a Phase 3 analysis for the finding. Cutsets were developed for small and medium loss of coolant accident scenarios which represented postulated conditions. A human reliability analysis (HRA) was developed that conservatively overestimated the failure rate for plant operators to perform a continuous action step that would have prevented nitrogen intrusion prior to the point in the procedure that contained the incorrect setpoint for isolating accumulators. This HRA was used as a screening value to evaluate the nonrecovered cutsets, and the value was totaled. The impact of the finding on core damage frequency was determined to be less than 1E-6 and the finding determined to be Green.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee**

M. Byrd, Design Engineering Supervisor  
T. Campbell, Nuclear Oversight  
D. Christianson, Training Manager  
M. Galle, Simulator Coordinator  
C. Gayheart, Plant Manager  
R. Gayheart, Fleet Training Manager  
D. Hall, Operations Training Supervisor  
D. Hobson, Operations Support  
L. Hogg, Nuclear Technical Specialist  
J. Horn, Regulatory Affairs Manager  
F. Hundley, Fleet Oversight Supervisor  
J. Hutto, Engineering Director  
P. Ivey, Regulatory Affairs Vice President  
T. Lynch, Site Vice President  
R. Martin, Engineering Programs Manager  
S. McGavin, Security Manager  
D. McKinney, Regulatory Response Manager  
R. Odom, Operations Lead Instructor  
C. Pierce, Regulatory Affairs Director  
M. Peel, Medical Services Coordinator  
D. Reed, Operations Training Supervisor  
L. Riley, Performance Improvement  
C. Salter, Nuclear Duty Officer  
L. Smith, Maintenance Manager  
B. Taylor, Performance Improvement Supervisor  
C. Thornell, Operations Director  
S. Varnum, Chemistry Manager  
W. Vierkandt, Radiation Protection Manager  
C. Westberry, Engineering Systems Manager

#### **NRC personnel**

Frank Ehrhardt, Chief, Branch 2, Division of Reactor Projects

## LIST OF ITEMS OPENED AND CLOSED

### Opened and Closed

05000364/2013003-01	NCV	Failure to Properly Maintain Procedures to Ensure Reactor Vessel Head Vent Path was Preserved (Section 1R20)
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### Opened

None

### Closed

None

### Discussed

None

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

Documents:

Farley Nuclear Plant High Voltage Switchyard Morning Report, Tuesday, May 21, 2013  
Unit 1 Control Log, May 16, 17, 20, and 21, 2013

Procedures:

FNP-0-ACP-4.0, Switchyard Control, Version 14.1  
FNP-0-AOP-21.0, Severe Weather, Version 37.0  
FNP-0-ARP-2.1, Annunciator VE2, 1G.4KV BUS OV-OR-UV OR LOSS OF DC, Version 35.1  
FNP-1-UOP-3.1, Power Operations, Version 114.0  
FNP-2-UOP-3.1, Power Operation, Version 103.0

**Section 1R04: Equipment Alignment**

Condition Reports:

361426	361248	404243	506365	609924	324621
593337	631218	593396	570654	578007	596442
597139	593396	572388	603307	603332	607745
626095	478761	479571	493188	509828	511670
511926	520450	609267	505506		

Drawings:

D205038 – P&ID Safety Injection System, Sheet 1, Version 36.0  
D205038 – P&ID Safety Injection System, Sheet 2, Version 24.0  
D205002 – P&ID Component Cooling Water, Sheet 1, Version 31.0  
D205038 – P&ID Safety Injection System, Sheet 3, Version 31.0

Other:

OPS62102G/52102G/40204A/ESP-5102G, Component Cooling Water Lesson Plan, Version 2  
OPS62102C/52102C/40302D/ESP-5102C, Containment Spray & Cooling Instructor and Course Outline, Version 3

**Section 1R05: Fire Protection Annual/Quarterly**

Drawings:

A-509018, Sheet 49, Version 1.0  
A-509018, Sheet 6, Revision 1  
A-508650, Sheet 12, Version 2.0  
A-508650, Sheet 5, Revision 1

**Section 1R06: Flood Protection Measures (71111.06)**

Procedures:

NMP-ES-051-004, Pull Box Inspection Procedure, Ver. 1.1

Documents:

Work order: SNC466795

Drawings:

D-202109, Unit 2 Outdoor Ducts and Grounding Plan – Circ. Water Pump Struc. Area

**Section 1R08: Inservice Inspection (ISI) Activities****Corrective Action Documents:**

CR 36947 dated 5/2/2009  
 CR 343336 dated 8/11/2011  
 CR 622092 dated 4/14/2013  
 CR 622093 dated 4/14/2013  
 CR 492181 dated 7/29/2012  
 TE 489276 dated 7/31/2012

**Procedures:**

NMP-ES-019, Boric Acid Corrosion Control Program, Version 9.0  
 NMP-ES-019-001, Boric Acid Corrosion Control Program Implementation, Version 8.0  
 NMP-ES-019-004, Boric Acid Corrosion Control Program – Corrosion Assessment, Version 2.0  
 PDI-UT-1, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds, Rev. E  
 PDI-UT-2, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds,  
 Rev. F  
 NMP-ES-024-502, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds  
 (Appendix VIII), Version 4.0

**Other Documents:**

UT Calibration/Examination of APR2-4500-37 Pipe to Pipe Weld dated 4/23/2013  
 GE Certificate of Conformity for Ultrasonic Probe Serial No. SC1515 dated 12/09/2010  
 Ultrasonic Instrument Calibration Data record and Certification for Krautkramer Model USN  
 60SW Serial Number 022PVK dated 12-11-2012  
 NDE Examiner Certification Records for Gahan, T.; Barnes, D.; Box, J.; Brown, D.; Kendrick, E.;  
 Kordzikowski, P.; Lofthus, G.  
 Welder Certification and Continuity Records for Bonifa, M.; Varner, K.; Bumpus, J.; Adams, T.;  
 Killebrew, J.  
 IER 004 – 2R21, NDE Evaluation Indication Report for minor cracking and spalling in RPV sump  
 cavity liner, dated 10-14-2011  
 Work Order (WO) SNC83669, Seal Weld U2 Pressurizer Auxiliary Spray Check Valve dated  
 11/18/10  
 WO SNC316233, Replace SW 8 in. Carbon Steel pipe with Stainless Steel, dated 10-15-11  
 WO SNC324095, Replace 2C Charging Pump Suction line, dated 10-17-11  
 Self Assessment and Final Report, NMP-GM-003-F04, dated 9/9/2011

**Section 1R11: Licensed Operator Requalification Program****Documents:**

13-S0603, Licensed Operator Continuing Training Simulator Exercise Guide LOCT 12-14  
 Segment 6, OPS-56400A, Version 0

**Procedures:**

NMP-EP-110, Emergency Classification Determination and Initial Action, Version 5.0  
 NMP-EP-111, Emergency Notifications, Version 7.4  
 NMP-EP-111-001, Emergency Notification Network Communicator Instructions – Farley,  
 Version 3.1



**Section 1R12: Maintenance Effectiveness**Condition Reports:

596442	597139	626727	616089	472778	569636
604230	67836	627811	2011102634		

Procedures:

NMP-ES-027-001 Maintenance Rule Implementation, Version 3.0

Work Orders:

482144	482145	482146	482146	74412	395737
367460	1110416001	1081174001	1081169501	10811696011	1081169501
1110416001					

Corrective Action Reports:

206044

**Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation**Procedures:

FNP-0-ACP-52.3, "Mode 1, 2, & 3 Risk Assessment," Version 9.0

FNP-0-UOP-4.0, "Shutdown Defense-In-Depth Assessment (Mode 4,5,6, Defueled), Version 46.1

**Section 1R15: Operability Determinations and Functionality Assessments**Condition Reports:

613013	543504	542159	543486	543504	628612
635885	645328	634424			

Technical Evaluations:

544140, 583151, 635905

Work Orders:

487638

**Section 1R18: Plant Modifications**Documents:

DCP SNC86713, Version 4.0

Work Orders:

434648 464647

**Section 1R19: Post Maintenance Testing**Condition Reports:

616603	617594	49989
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Procedures:

FNP-2-STP-608.0 Unit 2, Main Steam Safety Valve Operational Test, Version 31.0

FNP-2-STP-33.8, Verification of Steam Dump Arming From Reactor Trip (P-4) signal and P-4 Contact Verification, Version 12.0

Work Orders:

344707      477887      353677      434647      434648

**Section 1R20: Refueling and Other Outage Activities**Documents:

FNP-2-STP-107, Fuel Assembly Transfer Form, Version 19.1  
 J.M. Farley Nuclear Plant Unit 1 Cycle 23 Reload Evaluation Version 1, Westinghouse Electric Company, NF-AP-13-10, April 2013

Procedures:

FNP-0-ACP-47.3, Outage Preparation, Version 19.0  
 FNP-0-UOP-4.0, General Outage Operations Guidance, Version 46.3  
 FNP-2-MP-1.0, Maintenance Refueling Procedure, Version 58.0  
 FNP-2-SOP-1.3, Reactor Coolant System Filling and Venting-Vacuum Method, Version 58.2  
 FNP-2-SOP-1.6, Draining the Reactor Coolant System, Version 46.2  
 FNP-2-STP-18.4, Containment Mid-Loop and/or Refueling Integrity Verification and Containment Closure, Version 39.0  
 FNP-2-STP-29.6, Calculation of Estimated Critical Condition, Version 12.2  
 FNP-2-STP-35.0, Reactor Coolant System Pressure and Temperature/Pressurizer Temperature Limits Verification, Version 20.1  
 FNP-2-STP-35.1, Unit Startup Technical Specification Verification, Version 40.1  
 FNP-2-UOP-2.1, Shutdown of Unit from Minimum Load to Hot Standby, Version 59.1  
 FNP-2-UOP-2.2, Shutdown of Unit from Hot Standby to Cold Shutdown, Version 81.0  
 FNP-2-UOP-4.1, Controlling Procedure for Refueling, Version 62.1

**Section 1R22: Surveillance Testing**Condition Reports:

633336      633337      632646      630102      647492

Procedures:

FNP-1-STP-16.12B, 1B Containment Spray Automatic Starting Circuitry Test, Version 7.0  
 FNP-2-STP-33.2A, Unit 2 A train Reactor Trip Breaker Operability Test, Version 35.0  
 FNP-2-STP-33.0A, Unit 2 Solid State Protection System Train A Operability Test, Version 52.0  
 FNP-2-STP-22.20, Unit 2 TDAFW Pump Steam Admission Valves Air Accumulator Test, Version 13.1  
 FNP-2-STP-22.32, Unit 2 Turbine Driven Auxiliary Feedwater Pump Comprehensive and Pre-Service Test, Version 4.0  
 FNP-2-STP-608.0 Unit 2, Main Steam Safety Valve Operational Test, Version 31.0  
 FNP-2-STP-627, Local Leak Rate Testing of Containment Penetrations, Version 55.1  
 FNP-1-STP-9.0, RCS Leakage Test, Version 51.1  
 FNP-2-STP-9.0, RCS Leakage Test, Version 47.1  
 FNP-1-STP-22.2, 1B Auxiliary Feedwater Pump Quarterly Inservice Test, Version 39.1  
 NMP-AP-003, Procedure and Work Instruction Use and Adherence, Version 2.1  
 NMP-ES-013, Inservice Testing Program, Version 4.1  
 FNP-0-AP-24, Test Control, Version 10.0

Documents:

Joseph M. Farley Nuclear Plant Units 1 and 2 Inservice testing Program, Fourth Inspection Interval

Drawings:

D-175007, P&ID – Aux. Feedwater System, Version 31.0

Work Orders:

348061      344703      484507      483457      483458      425663

**Section 2RS1: Radiological Hazard Assessment and Exposure Controls**Procedures, Guidance Documents, and Manuals:

FNP-0-RCP-21, "Setup and Operation of the Health Physics Remote Monitoring System", Version (Ver.) 7.0

FNP-0-RCP-76, "Leak Testing of Radioactive Sources", Ver. 31

FNP-0-RCP-371, "High Efficiency Particulate Air (HEPA) Filter Unit Testing", Ver. 6.0

FNP-2-RCP-0.2, "Unit 2 Reactor Vessel Maintenance Sump Entry", Ver. 5.0

NMP-GM-002-001, "Corrective Action Program Instructions", Ver. 30.1

NMP-GM-002-F02, "Apparent Cause Determination Report", Ver, 13.0

NMP-HP-001, "Radiation Protection Standard Practices", Ver. 5.2

NMP-HP-202, "Radiological Controls for Highly Radioactive Objects", Ver. 1.0

NMP-HP-206, "Issuance, Use and Control of Radiation Work Permits", Ver. 2.0

NMP-HP-300, "Radiation and Contamination Surveys", Ver. 2.1

NMP-HP-301, "Airborne Radioactivity Sampling and Evaluation", Ver. 1.2

NMP-HP-302, "Restricted Area Classification, Postings, and Access Control", Ver. 5.0

NMP-HP-302-001, "Radiological Key Control", Ver. 2.0

NMP-HP-303, "Personnel Decontamination", Ver. 2.1

NMP-HP-305, "Alpha Radiation Monitoring", Ver. 4.0

NMP-TR-208, "Examination and Examination Security", Ver. 5.3

NMP-TR-401, "SNC General Employee Training", Ver. 8.0

Records and Data:

2011 10CFR61, Sample Data Set Validation for DAW 0612, 08/25/11

2011 and 2012 Perimeter Monitoring Dosimetry Location Results for ISFSI – Outside the Protected Area

2012 10CFR61, Sample Data Set Validation for DAW 0612, 08/13/12

Air Sample 10263, U2 Transfer Canal/Lower Cavity

Air Sample 10265, U2 CTMT Sump

Air Sample 10284, U2 Head Stand Grab

Air Sample 10285, U2 155' CTMT Upper Cavity

Air Sample 10287, U2 CTMT 155' O Ring Disposal Rx Head

Air Sample 10288, U2 CTMT 155' O Ring Disposal Rx Head

FNP HP Turnover Logs (HP Form 602), Dated 04/17, 04/18 and 04/19/13

FNP HP Work Plan, Reactor Head Lift and Set, Approved 05/04/12

HP Form 298, Pre-Job Briefing Record, U-2 CTMT Sump Entry, 04/16/13

NMP-HP-109, "Investigation of Alarming Dosimeters," Alarming Dosimetry Investigation Form (CR 624193)

NSTS Annual Reconciliation Report, Dated 01/30/13

Radiological Information Survey (RIS) 87120, PZR Cubicle Following Dose Rate Alarm  
 RIS 73792, U2 CTMT Sump  
 RIS 75314, U2 CTMT Sump  
 RIS 87054, U2 CTMT Sump  
 RIS 87163, U2 Reactor Cavity  
 RIS 87164, U2 Reactor Head Stand Area  
 RIS 87170, U2 Reactor Head  
 RIS 84505, HI-Track Surface Dose Rates  
 RIS 84589, HI-Track Surface Dose Rates  
 RIS 84593, HI-Track Surface Dose Rates  
 Radiation Work Permit (RWP) 13-2444, Repairs, Inspections, PMs in Rx Vessel Maintenance  
 Sump  
 RWP 13-2463, Rx Head Lift & Support of the 2R22 Outage  
 RWP 13-2467, Clean Out & Maintenance in the Rx Cavity Transfer Canal  
 Work Order (W/O) SNC 367626, Semi-annual Sealed Source Leak Test  
 W/O SNC 422623, Semi-annual Sealed Source Leak Test  
 U1 SFP Consolidated Trash Log, Updated 11/04/08  
 U2 SFP Consolidated Trash Log, Updated 04/28/10

Corrective Action Program (CAP) Documents:

FNP Check-In Self Assessment - Dry Cask Storage, 11/28/12  
 FNP Focused Area Self Assessment, FNP Health Physics Program, 01/12/13  
 CR 400394  
 CR 407080  
 CR 416464  
 CR 428622  
 CR 431055  
 CR 434032  
 CR 434133  
 CR 440652  
 CR 455180  
 CR 601991  
 CR 602043  
 CR 623525  
 CR 623526  
 CR 623545  
 CR 624000  
 CR 624193

**Section 2RS8: Radioactive Material Processing and Transportation**

Procedures and Guidance Documents:

FNP-0-M-030, "Process Control Program", Version 17  
 FNP-0-RCP-803, "Operation of the Low Level Radwaste Building", Ver. 23.0  
 FNP-0-RCP-809, "Isotopic Characterization, Scaling Factor Utilization, and Waste Classification  
 of Radioactive Waste Streams for Offsite Shipments and/or Surface Disposal", Ver. 18  
 FNP-0-RCP-812.0, "General Guidance for Use of Radioactive Shipment Casks", Version 4.0  
 FNP-0-RCP-818, "Prior Notification and Scheduling of Radioactive Material /Waste Shipments",  
 Rev. 6

FNP-0-TCP-50.1, "Health Physics and Chemistry Controlled Function Position Qualifications Requirements", Ver. 23.0  
 FNP-1-SOP-50.0, "Liquid Waste Processing System", Ver. 72.2  
 FNP-2-SOP-50.0, "Liquid Waste Processing System", Ver. 69.1  
 NMP-GM-002, "Corrective Action Program," Ver. 12.0  
 NMP-GM-002-001, "Corrective Action Program Instructions", Ver. 30.1  
 NMP-GM-011, "Procurement, Receipt and Control of Materials and Services", Ver. 23.0  
 NMP-HP-302, "Restricted Area Classification, Postings, and Access Control", Ver. 5.0  
 NMP-HP-401, "Receipt of Radioactive Material", Ver. 1.0  
 NMP-HP-405, "Shipment of Radioactive Waste and Radioactive Material", Ver. 1.2  
 NMP-HP-406, "Performing Surveys for Shipments of Radioactive Containers", Ver. 1.0  
 NMP-HP-407, "Radioactive Materials – Quantities of Concern Transportation Controls", Ver. 1.1  
 NMP-HP-408, "Solid Radioactive Waste Scaling Factor Determination and Implementation and Waste Classification", Ver. 1.0  
 NMP-HP-415, "Storage of Radwaste in Outdoor Process Shields", Ver. 1.0

Records and Data Reviewed:

10 CFR 61 Analysis Report, User Sample IDs: AR500-140LWP11V, Dated 11/28/11;  
 AR500-148LWP11V, Dated 11/28/11; DAW0612V, Dated 06/22/12; U1PriResin0812V, Dated  
 08/28/12; U1SFP0112V, Dated 01/03/12; U1RCS0112V, Dated 01/03/12; U2RCS0612V,  
 Dated 06/21/12; U2SFP0612V, Dated 06/26/12  
 Annual Radioactive Effluent Release Reports for 2011 and 2012  
 Plant Farley Radiological Information Survey Nos. 87101, Container Survey, Dated 04/17/13;  
 and 87102, Container Survey, Dated 04/17/13  
 Radioactive Material Shipment (RMS) 12-45  
 RMS 13-15  
 RMS 13-21  
 Radioactive Waste Shipment 12-07  
 Training Records – 49CFR172 Hazardous Material Training Documentation for selected  
 Radioactive Material shipping staff

CAP Documents:

CR 393531  
 CR 444233  
 CR 508705  
 CR 538080  
 CR 581818  
 Fleet Oversight Audit of Health Physics and Process Control Activities, F-HP-2011, Log: FFO-  
 2011-012, Dated 08/09/11

**Section 1EP6: Drill Evaluation**

Procedures:

NMP-EP-110, Emergency Classification Determination and Initial Action, Version 5.0  
 NMP-EP-111, Emergency Notifications, Versions 7.4

**Section 4OA1: Performance Indicator Verification**Procedures:

FNP-0-AP-54, Preparation and Reporting of NRC Performance Indicator Data and NRC Operating Data, Ver. 14.0

Documents:

Selected Unit 1 and Unit 2 Control Room Logs from April 2012 through April 2013  
 NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6  
 Farley Unit 1 and Unit 2 Consolidated Data Entry, MSPI Derivation Report, Heat Removal System, dated April 11, 2013  
 Farley Unit 1 and Unit 2 Consolidated Data Entry, MSPI Derivation Report, RHR System, dated April 11, 2013

**Section 4OA2: Problem Identification and Resolution**Condition Reports:

358220	527816	620038	43355	616089	472778
569636	604230	627811	67836	354474	368677
369736	615251	610549	71425	609992	605383
45485	28966	29604	48465	51610	65478
366976	50963	604358			

Work Orders:

436050	76544	55491	76287	366202	342715
2101130501	85916	2071429701	353756	2070220401	2082274501
2103577401	76311	2080681001	432866		

Procedures:

FNP-1-STP-609.0, Containment Tendon Surveillance Test Procedure, Version 20  
 NMP-GM-002, Southern Nuclear Company, Corrective Action Process, Version 12.1  
 NMP-GM-002-006, Root Cause Analysis Instruction, Version 8.0

Calculations:

A12205-R-001, Lucius Pitkin, Inc. Tendon Anchor Head Finite Element Analysis, Farley Unit 1, Aug. 2012  
 A12383-C-001, Lucius Pitkin, Inc. Calculation: Structural Qualification of Replacement Tendon Field End Anchor Head  
 Bechtel Calculation No. 11, Pre-Stressing Report-Containment, Rev. 0  
 SC-99-0174-001, Southern Nuclear Design Calculation, Projection of 60-Year Tendon Lift-Off Forces, Version 2  
 SC-SNC432512-001, Southern Company Calculation: Evaluation of Concrete Containment Stresses Two Adjacent Inactive Hoop Tendons, Version 1.0  
 SS-1102-16, Bechtel Inquiry: Technical Specification for Containment Pre-Stressing System, Section 502-6, Protection for Pre-Stressing Steel

Corrective Action Documents:

194725, Root Cause Investigation Report, Unit 1 Containment Tendon Failure  
 389113, Condition Report: North Side U-2 Containment exterior has a Brown Stain on Concrete Surface

449030, Condition Report: Broken Loop Tendon, U-1 Horizontal Loop Tendon (127 elevation) Appears to Have Broken

491028, Condition Report: Containment Tendon Grease Leaks

Drawings:

7597-03-C-9-15-8, Issue "H", Wall Tendon Layout between El. 104'-0" & 153'- 0"

7597-03-C-9-16-9, Wall Tendon Layout between El. 104'-0" & 153'- 0" @ 245 Deg to 305 Deg.

7597-03-C-9-7-6, Issue "F", Developed Wall Elevation Farley Containment Building in Area of Tendon 7AB

D176152, Containment Liner, Penetration Details, Rev. 6

D-176157, Containment Liner, Plan Section and Elevation, Rev. 25

Other:

12-1179-TR-001, Technical Report: Failure Analysis of Farley NUCLEAR Unit 1 Horizontal Post Tension Tendon Anchor Head, Rev. 0

210137001, Farley F2R20-ASME Section XI, Sub-Section IWE and Appendix J, Inspection Report: Example of IWE Report Credited in the Structural Monitoring Program

449030, Immediate Determination of Operability (IDO): U-1 Horizontal Loop Tendon (127'elevation) Appears to Have Broken.

460002427, Field Installation Manual, Inland Ryerson Construction Procedure, Nov. 22, 1975

NMS-99-0100, Southern Company Intra-Company Correspondence: Response to NRC Information Notice 99-10

PSC-SQ-12.1, Southern Nuclear Farley Station 2012, Unit 1 and Unit 2 Visual Containment Building Tendon Surveillance, Grease Replacement, Revision 0

PSC-SQ-8.0, Southern Nuclear Farley Station 2012, Unit 1 and Unit 2 Visual Containment Building Tendon Surveillance, Anchorage Inspection, Revision 0

SNC432510, Southern Company Design Change Package: Farley Unit 1 Containment Tendon Anchor Head Replacement, DCP Special Design Considerations, Version 2.0

Structural Monitoring Program for the Maintenance Rule, Attachment 1, Plant Farley Units 1 & 2 Periodic Inspections, RERF 1101014501, 3<sup>rd</sup> 5-Year Periodic Inspection (Partial)

**Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

Condition Reports:

654163	654381	654197	654287
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Documents:

Main Control Room logs

Procedures:

FNP-1-UOP-1.2, Startup of Unit from Hot Standby to Minimum Load, Ver. 104

FNP-1-STP-29.2, Shutdown Margin Calculation, Ver 31.0

FNP-1-ESP-0.1, Reactor Trip Response, Rev. 33.0

FNP-1-EEP-0, Reactor Trip or Safety Injection, Rev. 44.0

FNP-1-AOP-4.0, Loss of Reactor Coolant Flow, Ver. 19.0