



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

January 30, 2013

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

**SUBJECT: SURRY POWER STATION – NRC INTEGRATED INSPECTION REPORT
05000280/2012005, 05000281/2012005**

Dear Mr. Heacock:

On December 31, 2012, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station Units 1 and 2. The enclosed inspection report documents the inspection findings which were discussed on January 8, 2013, with Mr. Sloane and other members of your staff.

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

One NRC identified finding of very low safety significance (Green) was identified during this inspection. This finding was determined to be a violation of NRC requirements. The NRC is treating this violation as noncited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the violation or the significance of the NCV, 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 the Surry Power Station.

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 Surry Power Station.

D. Heacock

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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 Agencywide Document Access and Management 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/

Gerald J. McCoy, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-280, 50-281
License Nos.: DPR-32, DPR-37

Enclosure: Inspection Report 05000280/2012005, 05000281/2012005
w/Attachment: Supplemental Information

cc w/encl. (See page 3)

D. Heacock

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cc w/encl:

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D. Heacock

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Letter to David A. Heacock from Gerald J. McCoy dated January 30, 2013

SUBJECT: SURRY POWER STATION - NRC INTEGRATED INSPECTION REPORT
05000280/2012005 AND 05000281/2012005

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281

License Nos.: DPR-32, DPR-37

Report Nos: 05000280/2012005, 05000281/2012005

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 and 2

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: October 1, 2012 through December 31, 2012

Inspectors: J. Nadel, Acting Senior Resident Inspector
D. Mills, Acting Resident Inspector
A. Alen, Reactor Inspector (1R17)
B. Collins, Reactor Inspector (4OA5.3)
M. Coursey, Reactor Inspector (1R17)
J. Eargle, Senior Reactor Inspector (1R17)
E. Lea, Senior Operations Engineer (1R11.3)
J. Laughlin, Emergency Preparedness Inspector(1EP4)
L. Lake, Senior Reactor Inspector (1R08, 1R17)
E. Michel, Senior Construction Inspector (1R08)
M. Riley, Reactor Inspector(1R17)

Approved by: Gerald J. McCoy, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2012005, 05000281/2012005; 10/01/2012–12/31/2012; Surry Power Station, Units 1 and 2; Flood Protection Measures

The report covered a three month period of inspection by resident inspectors and region based inspectors. One finding was identified and determined to be a non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspect was determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 4, dated December 2006.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of Technical Specification 6.4.A.7, which requires appropriate corrective maintenance procedures which would have an effect on the safety of the reactor. Specifically, Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults," was inadequate to prevent or detect submerged cables in a safety-related manhole, which is a performance deficiency.

The inspectors determined that Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults" was inadequate to accomplish its intended purpose, which constitutes a performance deficiency in accordance with Technical Specification 6.4.A.7, which requires appropriate corrective maintenance procedures which would have an effect on the safety of the reactor. The inspectors determined that the finding was more than minor because it was associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this condition could lead to cable degradation, increased likelihood of cable failure, and subsequent risk associated with the failure of safety-related equipment.

The inspectors screened this finding in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and IMC 0609, Appendix A, "SDP for Findings At-Power", dated June 19, 2012 and determined the finding was of very low safety significance, Green, since it was a deficiency determined not to have resulted in the loss of operability or functionality of a single train for greater than its TS allowed outage time. The finding had a cross-cutting aspect in problem identification and resolution, corrective action program, P.1(c), because the corrective actions taken to address previous NRC identified concerns in the same manhole did not thoroughly evaluate the problem such that resolutions addressed the causes. (Section 1R06)

B. Licensee Identified Violations

None

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near rated thermal power (RTP) until November 22 when it was ramped to 74 percent RTP due to a spurious closure of a feedwater heater drain pump flow control valve. The unit returned to full RTP on November 26 and operated there for the remainder of the inspection period.

Unit 2 operated at or near RTP until October 3 when it was ramped to approximately 88 percent RTP for condenser waterbox maintenance. The unit returned to full RTP on October 8, and operated there until being taken offline for a refueling outage on November 1. The unit was returned to 100 percent RTP on December 6 and operated there for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Seasonal Readiness Reviews for Cold Weather

a. Inspection Scope

The inspectors reviewed licensee preparations for seasonal cold weather. Inspection focused on verification of design features and implementation of the licensee's procedure for cold weather conditions, 0-OSP-ZZ-001, "Cold Weather Preparation," Revision 13. The inspectors walked down key structures including the Turbine and Auxiliary Buildings, the Safeguards Buildings, the Emergency Switchgear and Relay Rooms, the Emergency Diesel Generator Rooms, the Fire Pump House, the High Level Intake Structure, and the Emergency Battery Rooms. The inspectors verified that HVAC systems were operating properly and that area temperatures remained within design requirements specified in the UFSAR. The mitigating systems reviewed during this inspection include the auxiliary feedwater systems, the low head safety injection pumps, the refueling water storage tanks, emergency diesel generators, and emergency switchgear.

b. Findings

No findings were identified.

.2 Site Specific Weather

a. Inspection Scope

The inspectors performed a site specific weather related inspection due to anticipated adverse weather conditions, specifically predicted wind speeds of in excess of 30 mph on October 29, 2012, due to Hurricane Sandy. The inspectors reviewed the licensee's preparations for potential severe weather as well as severe weather procedures Operations Checklist (OC) 21, "Severe Weather," and 0-AP-37.01, "Abnormal Environmental Conditions," Revision 58. The inspectors walked down site areas which included the Emergency Diesel Generator Rooms, Emergency Switchgear Room, the Turbine, Safeguards, and Auxiliary Buildings as well as outdoor areas within the protected area. During the walkdown, the inspectors looked for loose items and debris that could become a missile hazard during high winds, verified flooding barriers were installed and functional, and verified that emergency equipment was available and in the required standby mode.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

The inspectors conducted three equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, with the other train or system inoperable or out of service. The inspectors reviewed the functional systems descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system.

- 'A' and 'B' trains of the Unit 2 residual heat removal system while each train was sequentially inoperable during testing (2-OPT-RH-003)
- 'A' and 'B' trains of the Unit 2 containment spray system during valve stroke testing (2-OPT-CS-006)
- 'A' and 'B' trains of the Unit 1 low head safety injection system during quarterly pump testing (1-OPT-SI-005)

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 2 residual heat removal system to verify it was properly aligned and capable of performing its safety function, and to assess its material condition. During the walkdown, the inspectors verified breaker positions were in the proper alignment, component labeling was accurate, hangers and supports were functional, and local indications were accurate. Recent testing history was also reviewed to verify that standby components were performing within their design. System drawings, condition reports, the UFSAR, and TS were reviewed and outstanding deficiencies were verified to be properly classified and not affect system operability and capability to perform its safety function. The inspectors reviewed the corrective action program to verify equipment alignment issues were being identified and resolved.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Quarterly Fire Protection Reviews

a. Inspection Scope

The inspectors conducted tours of the six areas listed below that are important to reactor safety to verify the licensee's implementation of fire protection requirements as described in fleet procedures CM-AA-FPA-100, "Fire Protection/Appendix R (Fire Safe Shutdown) Program," Revision 5, CM-AA-FPA-101, "Control of Combustible and Flammable Materials," Revision 4, and CM-AA-FPA-102, "Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process," Revision 3. The reviews were performed to evaluate the fire protection program operational status and material condition and the adequacy of: (1) control of transient combustibles and ignition sources; (2) fire detection and suppression capability; (3) passive fire protection features; (4) compensatory measures established for out-of-service, degraded or inoperable fire protection equipment, systems or features; and (5) procedures, equipment, fire barriers, and systems so that post-fire capability to safely shutdown the plant is ensured. The inspectors reviewed the corrective action program to verify fire protection deficiencies were being identified and properly resolved.

- Unit 1 Cable Vault and Upper Cable Vault
- Unit 2 Cable Vault and Upper Cable Vault
- Mechanical Equipment Room # 5
- Unit 2 Containment
- Unit 1 Emergency Switchgear Room
- Unit 2 Emergency Switchgear Room

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed the internal flood protection measures and procedural controls established to address potential flooding in the Unit 1 and 2 Turbine Buildings, Unit 1 and 2 Emergency Switchgear Rooms, and Mechanical Equipment Rooms #3, #4, and #5. The inspectors conducted a walk down of the affected areas to observe and assess the condition of the installed flood dikes, floor drain backflow preventers, the sealing of holes and penetrations between flood areas, the adequacy of water tight doors, the operability of flooding alarms, and the installed turbine building sump pumps. The inspectors reviewed the corrective action program and verified internal flooding related problems were being identified and properly addressed.

b. Findings

No findings were identified.

.2 Annual Review of Electrical Manholes

a. Inspection Scope

The inspectors reviewed and observed licensee periodic inspection of safety-related manholes 1-EP-MH-1 and 1-EP-MH-2, which contain EDG #1 control cables, to assess the condition of electrical cables located inside the underground manholes as an additional annual sample. The inspectors verified by direct observation and review of the associated inspection documents that the cables, splices, support structures, and sump pumps located within the manholes appeared intact, and that the cables were not being impacted by water. In addition, the inspectors reviewed several past periodic licensee inspection results for each of the above mentioned manholes to ensure that any degraded conditions identified were appropriately resolved.

b. Findings

Introduction: The inspectors identified a Green noncited violation of Technical Specification 6.4.A.7, which requires appropriate corrective maintenance procedures which would have an effect on the safety of the reactor. Specifically, Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults," was inadequate to prevent or detect submerged cables in a safety-related manhole, which is a performance deficiency.

Description: In March of 2011, inspectors identified material deficiencies, inappropriate cable supports, and trash in manhole 1-EP-MH-1. The observed deficiencies were not accurately documented in the corrective action system and further engagement by the inspectors was necessary to ensure that all the observed issues were properly identified. There was water noted in the manhole but no submerged cables could be seen. The deficiencies were later corrected. Inspectors also made observations regarding the efficacy of the inspection procedure, 0-MCM-1207-01, based on the fact that it did not allow entry into the manhole to perform inspections. The licensee chose not to take any action as a result of this observation and an opportunity to fully investigate the causes of the identified deficiencies was missed.

On October 10, 2012, inspectors observed an engineering inspection of the same manhole as part of beyond design basis flooding walkdowns. The inspections were being performed to verify cable penetrations were adequately sealed from external flooding sources and inspection of the manhole interior components was not in scope. During this inspection the inspectors entered the manhole and identified three cables that were submerged due to a buildup of mud on the bottom of the manhole that prevented proper drainage to the installed sump pump. The mud created a basin that retained enough water to cover the cables. The licensee determined that these cables were control power cables for emergency diesel generator number one.

The inspectors reviewed past performances of Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults," which is performed quarterly to ensure cables are not submerged. The inspectors noted that the last performance was in June 2012 and three inches of water was recorded 1-EP-MH-1. There was no identification that cables were submerged because the procedure requires only a visual inspection from ground level and the submerged cables identified by inspectors on October 10 were only visible upon entering the manhole. Similarly, water was noted during the March 2011 inspection. Thus, it is likely that the cables had been repeatedly submerged in standing water for extended periods of time and this submergence has the potential to affect the ability of the cables to perform their safety-related functions.

The inspectors determined that Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults" was inadequate to accomplish its intended purpose to "ensure the water level is below a level that could cause electrical cable submergence." This determination is based, in part, on a warning in the procedure that does not allow entry into the manhole to perform inspections and the lack of any other provisions to ensure that 100 percent of the manhole is visually inspected. The three submerged cables were found to be low voltage (480V) feeders for a number of different support equipment loads required for operability of EDG #1.

Inspectors noted that, as of January 8, 2013, the submerged cables had not been corrected. However, corrective actions were created and are being tracked until the work is completed.

Analysis: The inspectors determined that Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults" was inadequate to accomplish its intended purpose, which constitutes a performance deficiency in accordance with Technical Specification 6.4.A.7, which requires appropriate corrective maintenance procedures which would have an effect on the safety of the reactor. The inspectors

determined that the finding was more than minor because it was associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this condition could lead to cable degradation, increased likelihood of cable failure, and subsequent risk associated with the failure of safety-related equipment. The inspectors screened this finding in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and IMC 0609, Appendix A, "SDP for Findings At-Power", dated June 19, 2012, and determined the finding was of very low safety significance, Green, since it was a deficiency determined not to have resulted in the loss of operability or functionality of a single train for greater than its TS allowed outage time. The finding had a cross-cutting aspect in problem identification and resolution, corrective action program, P.1(c), because the corrective actions taken to address previous NRC identified concerns in the same manhole did not thoroughly evaluate the problem such that resolutions addressed the causes.

Enforcement: Surry Technical Specification 6.4.A.7 requires, in part, that "detailed written procedures with appropriate instructions be provided for conditions which include: corrective maintenance operations which would have an effect on the safety of the reactor." These requirements are implemented, in part, by Dominion procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults."

Contrary to the above, since March 2010, Dominion procedure 0-MCM-1207-01 has been inadequate to accomplish its intended purpose to "ensure the water level is below a level that could cause electrical cable submergence." The licensee has entered this issue into their CAP as 491063. Because this violation was determined to be of very low safety significance and has been entered into the licensee's CAP, it is being treated as a NCV consistent with section 2.3.2 of the NRC Enforcement Policy: NCV 0500280/2012005-01, Submerged Cables Identified in Safety-Related Manhole.

1R08 Inservice Inspection Activities

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: From November 12, through November 16, 2012, 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, chemical and volume control system, risk-significant piping and components in Unit 2. The inspectors' activities included a review of non-destructive examinations (NDE) to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI, Rules for Inservice Inspection Requirements for Nuclear Power Plant Components (ISI Program), Fourth 10-year inspection interval. The Section XI code of record is the 1998 Edition through 2000 Addenda. Those examinations conducted were scheduled to meet examinations schedule requirements for the 1st outage of the 3rd period of the ISI Program. The inspectors conducted reviews to verify that indications and defects (if present) were appropriately evaluated and

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disposed in accordance with the requirements of the ASME Code, Section XI, acceptance standards.

The inspectors reviewed the following NDE, mandated by the ASME Code Section XI 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 disposed in accordance with the ASME Code or an NRC-approved alternative requirement.

- Radiographic Testing (RT) for replacement valve 02-CH-HCV-2310A-VALVE, 3" pipe-to-valve weld 1-28A, Work Order # 38103108113, and
- RT for replacement valve 02-CH-HCV-2310A-VALVE, 3" pipe-to-pipe weld 1-55, Work Order # 38103108113.

The licensee did not identify any recordable indications that were accepted for continued service in the previous refuelling outage; therefore, no NRC review was completed for this inspection procedure attribute.

The inspectors observed a sample of activities and reviewed records associated with the eight pressure-boundary butt-welds for the replacement of 02-CH-HCV-2310A-VALVE (3" Chemical and Volume Control System check valve), to evaluate if the licensee met the repair/replacement requirements of ASME Code Section XI, and quality assurance requirements of 10 CFR 50, Appendix B. Specifically, the inspectors reviewed the repair/replacement plan, weld data records, filler material issue slips, welding procedures, welding procedure specification and associated procedure qualification records, welder qualifications, and welding material certification. The inspectors also walked down all four filler metal issue rooms and two satellite safety-related storage areas, observed in-process GTAW, and interviewed welders, the weld foreman, and Quality Control personnel.

PWR Vessel Upper Head Penetration (VUHP) Inspection Activities: For the Unit 2 vessel head, a bare metal visual examination and 100 percent volumetric examination inspection was required this outage pursuant to 10 CFR 50.55a. The inspectors observed portions of the Unit 2 bare metal visual examination and volumetric examination and observed/reviewed NDE reports for VUHPs No. 29, 37, 49 and 63 for the ultrasonic examination to determine if the activities, including the disposition of indications and defects, were conducted in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a (g) (6) (ii) (D). In particular, the inspectors evaluated if the required visual and volumetric examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures. Additionally, the inspectors evaluated if the licensee's criteria for visual and volumetric examination quality and instructions for resolving interference and masking issues were consistent with 10 CFR 50.55a.

The licensee did not identify any relevant indications that were accepted for continued service during the bare metal visual exam or volumetric exam. Additionally, the licensee did not perform any welded repairs to vessel head penetrations since the beginning of the preceding Unit 2 refueling outage. Therefore, no NRC review was completed for these inspection procedure attributes.

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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 walk-down inspections performed during the current fall refueling outage. The inspectors also interviewed the BACC program owner, conducted an independent walk-down 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 licensee evaluation of reactor coolant system components with boric acid deposits to evaluate if degraded components were documented in the corrective action system. The inspectors also evaluated the corrective actions for any degraded reactor coolant system components against the component ASME Code Section XI, and other licensee committed documents:

- 2-CH-HCV-2310A

Steam Generator (SG) Tube Inspection Activities: The inspectors observed the following activities and/or 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):

- Reviewed the licensee's in-situ SG tube pressure testing screening criteria. In particular, assessed whether assumed NDE flaw sizing accuracy was consistent with data from the EPRI examination technique specification sheets or other applicable performance demonstrations.
- Compared the numbers and sizes of SG tube flaws/degradation identified against the licensee's previous outage Operational Assessment.
- Reviewed the SG tube ET examination scope and expansion criteria.
- Evaluated if the licensee's SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to the licensee's SG tubes.
- Reviewed the licensee's implementation of their extent of condition inspection scope and repairs for new SG tube degradation mechanism(s). No new degradation mechanisms were identified during the EC examinations.
- Evaluated if the ET equipment and techniques used by the licensee to acquire data from the SG tubes were qualified or validated to detect the known/expected types of SG tube degradation in accordance with Appendix H, Performance Demonstration for Eddy Current Examination, of EPRI Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7.
- Reviewed ET personnel qualifications.
- Observed volumetric eddy current examination of SG tubes R15C16, R13C61, and R43C64.

Problems Identification and Resolution: The inspectors reviewed a sample of ISI-related problems which were identified by the licensee and entered into the corrective action program as condition reports (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 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the List of Documents Reviewed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

LORP Scenario RQ-12.7-ST-2

The inspectors observed and evaluated a licensed operator simulator exercise on October 11. The scenario involved a loss of all charging pumps, a reactor trip, a large break Loss of Coolant Accident (LOCA) followed by a loss of high head safety injection and low head safety injection, and Severe Accident Management Guidelines (SAMG) implementation. This scenario was intended to exercise the entire operations crew and assess the ability of the operators to react correctly to multiple failures. The inspectors observed the crew's performance to determine whether the crew met the scenario objectives; accomplished the critical tasks; demonstrated the ability to take timely action in a safe direction and to prioritize, interpret, and verify alarms; demonstrated proper use of alarm response, abnormal, and emergency operating procedures; demonstrated proper command and control; communicated effectively; and appropriately classified events per the emergency plan. The inspectors observed the post training critique to determine that weaknesses or improvement areas revealed by the training were captured by the instructor and reviewed with the operators.

b. Findings

No findings were identified.

.2 Resident Inspector Observation of Control Room Operations

b. Inspection Scope

During the inspection period, the inspectors conducted observations of licensed reactor operator activities to ensure consistency with licensee procedures and regulatory requirements. For the following activities, the inspectors observed the following

elements of operator performance: (1) operator compliance and use of plant procedures including technical specifications; (2) control board component manipulations; (3) use and interpretation of plant instrumentation and alarms; (4) documentation of activities; (5) management and supervision of activities; and (6) control room communications.

- Operator response to a degrading condenser vacuum
- Starting reactor coolant pump '1C'
- Unit 2 ramp and shutdown prior to the scheduled refueling outage
- Reactor coolant system drain from 5% level in the pressurizer to reactor flange level

b. Findings

No findings were identified.

3. Annual Review of Licensee Requalification Examination Results:

a. Inspection Scope

On February 10, 2012, the licensee completed the annual requalification operating examinations and on March 23, 2012, the licensee completed the comprehensive biennial requalification written examinations as required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). 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 Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the three equipment issues described in the condition reports listed below, the inspectors evaluated the effectiveness of the corresponding licensee's preventive and corrective maintenance. The inspectors performed a detailed review of the problem history and associated circumstances, evaluated the extent of condition reviews, as required, and reviewed the generic implications of the equipment and/or work practice problem(s). Inspectors performed walkdowns of the accessible portions of the system, performed in-office reviews of procedures and evaluations, and held discussions with system engineers. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65), station procedures ER-AA-MRL-10, Revision 4, "Maintenance Rule Program," ER-AA-MRL-100, Revision 5,

“Implementing the Maintenance Rule,” and DNES-AA-NAF-MRL-1001, Revision 2, “Maintenance Rule (a)(4) Basis Document.”

- CR494649, Damaged coupling on Unit 2 turbine building sump pump ‘2C’
- CR496197, Auxiliary feedwater pump ‘3A’ motor bearing oil samples have quantifiably high silicon
- CR492739, Received Unit 2 safety injection pump ‘1B’ seal head tank low level alarm

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, the six activities listed below for the following: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and, (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of 10 CFR 50.65(a)(4) and the data output from the licensee’s safety monitor associated with the risk profile of Units 1 and 2. The inspectors reviewed the corrective action program to verify deficiencies in risk assessments were being identified and properly resolved.

- Unit 2 risk while in lowered inventory coincident with a reactor internals lift
- Unit 2 risk during Hurricane Sandy impact onsite
- Unit 2 risk following the inadvertent discharge of the ‘2B’ main station battery to 3 volts
- Unit 2 risk during evolution to drain the reactor coolant system to flange level
- Unit 1 risk during Temporary Modification S1-12-209 installation of a jumper around ‘1B’ main station battery cell #17
- Unit 2 risk during ramping to 92 percent for turbine governor valve freedom testing

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the five operability evaluations listed below, affecting risk-significant mitigating systems, to assess as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether

other existing degraded conditions were considered; (4) if compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation and the risk significance. The inspectors' review included verification that operability determinations were made as specified in OP-AA-102, Revision 9, "Operability Determination." The inspectors reviewed the licensee's corrective action program to verify deficiencies in operability determinations were being identified and corrected.

- OD 501, Voids discovered in Unit 2 containment dome concrete
- OD 504, Emergency diesel generators #1 and #3 extent of cause review from root cause 1086
- OD 509, Unit 2 'B' main station battery discharged to 3 volts by indication
- CR 498395, Internal retaining ring used on Unit 2 reactor coolant pump 'B' support
- CR 494649, Turbine building sump pump torque coupler found degraded

b. Findings:

No findings were identified.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, Updated Final Safety Analysis Report (UFSAR), or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed seven evaluations and additional information such as drawings, calculations, supporting analyses, the UFSAR, and Technical Specifications (TS) associated with the evaluations to confirm that the licensee had appropriately concluded that the changes, tests, or experiment could be accomplished without obtaining a license amendment. The seven evaluations reviewed are listed in the List of Documents Reviewed section.

The inspectors reviewed documentation for 19 changes for which the licensee had determined that evaluations were not required, to confirm that the licensee's conclusions to screen out these changes were correct and consistent with 10CFR50.59. The 19 changes reviewed are listed in the List of Documents Reviewed section.

The inspectors reviewed engineering design change packages for seven material, component, and design-based modifications to evaluate the modifications for adverse effects on system availability, reliability, and functional capability. The seven modifications reviewed are as follows:

- DCP SU-08-00018, Containment Spray Discharge MOV Modifications
- DCP SU-08-00025, Turbine Building Flood Control Panel UPS Installation
- DCP SU-10-01012, Underground Fuel Oil Storage Tank Vent Mod
- DCP SU-10-01014, Add Gas Eductors to LHSI Pumps

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- DCP SU-11-00008, Unit 1 ES-1.4 MOV Modifications
- LSM SU-0-07-016, Replace Emergency Diesel Generator Speed Sensing Relay
- SU-PTE-9003426, Thermal Magnetic Case Circuit Breakers

Documents reviewed included procedures, engineering calculations, modification design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the living UFSAR, supporting analyses, TS, and design basis information. The inspectors additionally reviewed test documentation to ensure adequacy in scope and conclusion. The inspectors review was also intended to verify that all details were incorporated in licensing and design basis documents and associated plant procedures.

The inspectors also reviewed selected condition reports and the licensee's recent self-assessment associated with modifications and screening/evaluation issues to confirm that problems were identified at an appropriate threshold; were entered into the corrective action process; and appropriate corrective actions had been initiated and tracked to completion.

b. Findings

No findings were identified.

1R18 Plant Modifications

.1 Temporary Modification S1-12-209

a. Inspection Scope

The inspectors reviewed temporary modification, S1-12-209 "Install Jumper around Cell 17" of the Unit 1 'B' station battery to evaluate the change for adverse effects on system availability, reliability, and functional capability. Documents reviewed included modification design and implementation packages, work orders, site drawings, applicable sections of the FSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and FSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors verified that the temporary modification was in accordance with CM-AA-TDC-204, "Temporary Modifications," Revision 3, and for the related work package, that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems. The inspectors also reviewed any related CRs to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

b. Findings:

No findings were identified.

.2 Temporary Modification S2-12-111

a. Inspection Scope

The inspectors reviewed temporary modification S2-12-111, "Alternate RCS Level Indication" to evaluate the change for adverse effects on system availability, reliability, and functional capability. Documents reviewed included modification design and implementation packages, work orders, site drawings, applicable sections of the FSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and FSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors verified that the temporary modification was in accordance with CM-AA-TDC-204, Revision 3, "Temporary Modifications," and for the related work package, that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems. The inspectors also reviewed any related CRs to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

b. Findings:

No findings were identified.

.3 Permanent Modification DCP-SU-11-01216

a. Inspection Scope

The inspectors reviewed permanent modification design change package (DCP) SU-11-01216, "Reactor Coolant Inventory Level" to evaluate the change for adverse effects on system availability, reliability, and functional capability. Documents reviewed included modification design and implementation packages, work orders, site drawings, applicable sections of the FSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and FSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors also reviewed any related condition reports (CRs) to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed six post maintenance test procedures and/or test activities for selected risk-significant mitigating systems listed below, to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform in accordance with VPAP-2003, "Post Maintenance Testing Program," Revision 14.

- 1-EPT-0102-02, Rev. 4, Monthly station battery '1B' cell voltage check, following station battery '1B' return to service after cell 17 jumpered out
- 2-OPT-FW-001, Rev. 31, Motor driven auxiliary feedwater pump '3A' periodic test, following motor bearing overhaul and replacement
- 2-IP-RC-L-001, Rev. 0, Reactor coolant inventory level calibration, following installation of DCP SU-11-01216
- 2-PT-8.5, Rev. 26 {OTO1}, Consequence limiting safeguards (Hi-Hi Train), following replacement of relays 2-CLS-RLY-2BM and 2-CLS-RLY-2AM
- 2-NPT-RX-008, Rev. 26, Startup physics testing, during Unit 2 reactor startup following refueling outage 24
- 2-PT-8.4, Rev. 11, Consequence limiting safeguards (Hi-Train), following replacement of relay 2-CLS-RLY-1A11

b. Findings

No findings were identified.

1R20 Refueling and Other Outage ActivitiesUnit 2 Refueling Outagea. Inspection Scope

The inspectors reviewed the Outage Safety Review (OSR) and related contingency plans for the Unit 2 refueling outage, which began on November 1, 2012, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The inspectors used Inspection Procedure 71111.20, "Refueling and Outage Activities," to observe portions of the maintenance and startup activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk plan and applicable TS. The inspectors monitored licensee controls over the outage activities listed below.

- Licensee configuration management, including daily outage reports, to evaluate maintenance of defense-in-depth commensurate with the OSR for key safety functions and compliance with the applicable TS when taking equipment out of service.
- Implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities.
- Controls over activities that could affect reactivity.
- Implementation of heavy load lifts inside containment
- Startup and ascension to full power operation, tracking of startup prerequisites, and walkdown of the primary containment to verify that debris had not been left which could block emergency core cooling system strainers.
- Licensee identification and resolution of problems related to refueling outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the eight surveillance tests listed below, the inspectors examined the test procedures, witnessed testing, or reviewed test records and data packages to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable, and that the surveillance requirements of TS were met. The inspectors also determined whether the testing effectively demonstrated that the systems or components were operationally ready and capable of performing their intended safety functions.

In-Service Testing:

- 2-OPT-CS-006, Rev. 14, RWST chemical addition tank and containment spray system motor operated valve stroke testing
- 1-OPT-SI-005, Rev. 29, Low head safety injection pump test

Surveillance Testing:

- 2-OPT-ZZ-002, Rev. 30, Engineered safeguards features actuation with undervoltage and degraded voltage - 2J bus
- 2-OPT-RH-003, Rev. 17, Residual heat removal system operability test
- 2-EPT-0109-01, Rev. 19, Station battery 2A pilot cell and bus voltage checks
- 0-OPT-SW-003, Rev. 46, Emergency service water pump 1-SW-P-1C PT
- 0-OPT-EG-001, Rev. 61, EDG #3 monthly start exercise test

Appendix J Leak Rate Determination

- 2-OPT-CT-201, Rev. 19, Containment isolation valve local leak rate testing (type 'C' containment testing)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness1EP4 Emergency Action Level and Emergency Plan Changesa. Inspection Scope

The NSIR headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession number ML121920487, as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed one emergency response training drill conducted on October 2, 2012, to assess licensee performance in event classification per the emergency plan, protective action recommendations, and off-site notifications. The drill involved a hostile based threat to the facility. The inspectors observed conduct of the drill from the LEOF and the subsequent critique performance. The inspectors assessed abnormal and emergency procedure usage, emergency plan classifications, protective action recommendations, respective notifications and the adequacy of the licensee's drill critique. The inspectors verified that drill deficiencies were captured into the licensee's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors performed a periodic review of the following three Unit 1 and Unit 2 PIs to assess the accuracy and completeness of the submitted data and whether the performance indicators were calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspection was conducted in accordance with NRC Inspection Procedure 71151, "Performance Indicator Verification." Specifically, the inspectors reviewed the Unit 1 and Unit 2 data reported to the NRC for the period October 1, 2011, through September 30, 2012. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, licensee MSPI data forms, and related CRs.

- Unit 1 & 2 High Pressure Injection MSPI
- Unit 1 & 2 Residual Heat Removal MSPI
- Unit 1 & 2 Cooling Water MSPI

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Reviews of items Entered into the Corrective Action Program:

a. Inspection Scope

As required by NRC Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily CR report summaries and periodically attending daily CR Review Team meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Review of CR418791, Manhole #1 Deficiencies Identified

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR481791, "Manhole#1 Deficiencies Identified", to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and

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appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in procedure, PI-AA-200, "Corrective Action Program," Revision 20 and 10 CFR 50, Appendix B.

b. Findings

The inspectors noted that the licensee did not fully document all of the NRC identified deficiencies in the CAP. Further engagement was necessary to ensure all of the deficiencies were properly identified in the CAP. See section 1R06 of this report for more information.

.3 Annual Sample: Review of CR484607, FME Identified in EDG #2

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective Actions for CR484607, "Piece of plastic tubing removed from EDG #2 sump", to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in procedure, PI-AA-200, "Corrective Action Program," Revision 20 and 10 CFR 50, Appendix B.

b. Findings

No findings were identified. Inspectors noted that corrective actions from this event included an extent of condition review by each organization on site that samples plant equipment or processes to ensure that FME practices were adequate. It was also noted that the Engineering organization responsible for taking oil samples from plant equipment developed a fail-safe design "J-hook" stainless steel sample tube which cannot be inadvertently dropped into the system being sampled. The corrective actions, in general, were appropriate to the circumstances; however inspectors noted that some corrective actions associated with procedural changes to account for the new sampling method for the EDGs, while still being tracked, had not been completed by the time of this report.

.4 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for operator workarounds (OWAs). The inspectors reviewed the cumulative effects of the licensee's OWAs and licensee procedure OP-AA-1700, Rev. 5, "Operations Aggregate Impact." The inspectors attended meetings where the Operations Aggregate Impact data were reviewed and corrective actions discussed. The inspectors also reviewed the Main Control Room Deficiency Log to ensure that no deficiencies were impacting the operator's ability to safely operate the plant and effectively respond to

abnormal and emergency plant conditions. The inspectors reviewed and monitored licensee planned and completed corrective actions to address underlying equipment issues causing the OWAs and deficiencies. The inspectors also evaluated OWAs against the requirements of the licensee's CAP as specified in PI-AA-200, Rev. 20, "Corrective Action," 10 CFR 50, Appendix B, and OP-AA-100, Rev. 22, "Conduct of Operations."

b. Findings

No findings were identified.

4OA5 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 the 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.

2. (Discussed) NRC Temporary Instruction 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns"

a. Inspection Scope

Inspectors conducted independent walkdowns to verify that the licensee completed the actions associated with the flood protection feature specified in paragraph 03.02.a.2 of this TI. Inspectors are performing walkdowns at all sites in response to a letter from the NRC to licensees, entitled "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 Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340).

Enclosure 4 of the letter requested licensees to perform external flooding walkdowns using an NRC-endorsed walkdown methodology (ADAMS Accession No. ML12056A050). Nuclear Energy Industry (NEI) document 12-07 titled, "Guidelines for Performing Verification Walkdowns of Plant Protection Features," (ADAMS Accession No. ML12173A215) provided the NRC-endorsed methodology for assessing external flood protection and mitigation capabilities to verify that plant features, credited in the

CLB for protection and mitigation from external flood events, and are available, functional, and properly maintained.

b. Findings

Findings or violations associated with the flooding, if any, will be documented in the 1st quarter integrated inspection report of 2013.

.3 (Closed) Temporary Instruction 2515/188,- "Inspection of Near Term Task Force Recommendation 2.3 Seismic Walkdowns"

a. Inspection Scope

The inspectors accompanied the licensee on their seismic walkdowns of the following components in the Unit 2 Emergency Switchgear Room and Cable Vault on August 22, 2012 and the Spent Fuel Pit Cooling Pump Room on August 29, 2012:

- 2-EP-MCC-2H1-2N, Unit 2 emergency bus 2H MCC
- 2-EP-MCC-2K, Unit 2 MCC for control room chiller 4B
- 2-EP-LCC-2H, Unit 2 480V 2H bus switchgear
- 2-EP-LCC-2H1, Unit 2 480V 2H bus switchgear
- 1-FC-35, Spent fuel pit cooling pump 1B suction header isolation valve
- 1-FC-40, Spent fuel pit heat exchanger 1B inlet isolation valve
- 1-FC-E-1B, Spent fuel pit heat exchanger 1B
- 1-FC-P-1B, Spent fuel pit cooling pump 1B

Additionally, the inspectors independently performed walkdowns of the following components in the Unit 1 and Unit 2 Safeguards Building on October 10, 2012, and in the EDG #1 and EDG #2 Rooms, and the 125 VDC Station Battery Rooms on October 11, 2012:

- 1-FW-P-2, Unit 1 turbine driven auxiliary feedwater pump
- 1-FW-T-2, Unit 1 turbine driven auxiliary feedwater pump turbine
- 1-FW-E-9, Unit 1 turbine driven auxiliary feedwater pump oil cooler
- 1-FW-MOV-160A, Unit 2 to Unit 1 auxiliary feedwater system cross-connect
- 1-MS-GV-005, Unit 1 turbine driven auxiliary feedwater pump governor valve
- 1-MS-PCV-102A, Unit 1 turbine driven auxiliary feedwater pump PCV
- 1-MS-TV-101A, Unit 1 turbine driven auxiliary feedwater pump trip valve
- 1-MS-TV-120, Unit 1 turbine driven auxiliary feedwater pump steam isolation valve
- 2-FW-P-2, Unit 2 turbine driven auxiliary feedwater pump
- 2-FW-T-2, Unit 2 turbine driven auxiliary feedwater pump turbine
- 2-FW-P-3A, Unit 2 motor driven auxiliary feedwater pump
- 2-FW-E-9, Unit 2 turbine driven auxiliary feedwater pump oil cooler
- 2-MS-GV-005, Unit 2 turbine driven auxiliary feedwater pump governor valve
- 2-MS-PCV-202A, Unit 2 turbine driven auxiliary feedwater pump PCV
- 2-MS-TV-201A, Unit 2 turbine driven auxiliary feedwater pump trip valve
- 2-MS-TV-220, Unit 2 turbine driven auxiliary feedwater pump steam isolation valve

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- 1-EE-EG-1, emergency diesel generator #1
- 1-EE-TK-3, emergency diesel generator #1 fuel oil day tank
- 1-EG-C-2, emergency diesel generator #1 air compressor
- 1-EG-TK-2, emergency diesel generator #1 air compressor air receiver
- 1-EE-B-EG1, emergency diesel generator #1 battery
- 1-EE-BC-EG1, emergency diesel generator #1 battery charger
- 1-EPD-B-1A, Unit 1 125V DC battery 1A
- 2-EP-MCC-2H1-1A, emergency bus 2H MCC
- 2-EE-EG-1, emergency diesel generator #2
- 2-EE-TK-3, emergency diesel generator #2 fuel oil day tank
- 2-EG-C-2, emergency diesel generator #2 air compressor
- 2-EE-B-EG2, emergency diesel generator #2 battery
- 2-EE-BC-EG2, emergency diesel generator #2 battery charger
- 2-EPD-B-2B, Unit 2 125V DC battery 2B
- 2-EPD-B-2A, Unit 2 125V DC battery 2A

The inspectors verified, for all of the above listed components, that they were free of the following potentially adverse seismic conditions:

- Anchorage was free of bent, broken, missing or loose hardware
- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation.
- Structures, systems and components will not be damaged from impact by nearby equipment or structures.
- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment.
- Attached lines have adequate flexibility to avoid damage.
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area.
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area.
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding).

Observations made during the walkdown that could not be determined to be acceptable were entered into the licensee's corrective action program for evaluation.

Additionally, inspectors verified that items that could allow the spent fuel pool to drain down rapidly were added to the SWEL and these items were walked down by the licensee. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

Enclosure

.3 Surry Unit 2 RCS Level Indication System Commitment Closeout

a. Inspection Scope

In a letter dated June 6, 2012, Dominion made commitments to the NRC regarding the Unit 2 RCS level indication system. Specifically, Dominion committed to “either identifying and correcting the definitive cause of the erratic Surry Unit 2 RCS standpipe level indication or replacing the existing system with a reliable RCS level indication system during the next refueling outage. Furthermore, the repair/replacement activities will ensure that the Generic Letter 88-17 specifications for independent, reliable, and continuous RCS water level indication during reduced inventory conditions are met and maintained.”

In the fall of 2012, inspectors observed selected portions of the planning, design, testing, installation, and inservice utilization of a replacement RCS level indication system on Surry Unit 2. This permanent plant modification, SU-11-01216, is designed to meet the above commitments to provide independent, reliable, and continuous RCS water level indication during reduced inventory conditions. Further inspection of this modification is discussed in sections 1R18 and 1R19 of this report.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Resident Inspectors Exit Meeting Summary

On January 8, 2013, the inspection results were presented to Mr. K. Sloane and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

P. Blasioli, Director, Nuclear Protection Services & Emergency Preparedness
E. Collins, Manager, Emergency Preparedness
J. Eggart, Manager, Radiation Protection & Chemistry
B. Garber, Supervisor, Station Licensing
L. Hilbert, Manager, Outage and Planning
B. Hoffner, Manager, Nuclear Fleet Emergency Preparedness
R. Johnson, Manager, Operations
L. Lane, Site Vice President
F. Mladen, Director, Station Safety and Licensing
C. Olsen, Director, Station Engineering
L. Rollings, EP Staff
K. Sloane, Plant Manager (Nuclear)
M. Smith, Manager, Nuclear Oversight
W. Thompson, EP Staff
N. Turner, Supervisor, Emergency Preparedness
M. Wilda, Supervisor, Auxiliary Systems

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000280, 281/2012005-01	NCV	Submerged Cables Identified in Safety-Related Manhole (Section 4OA2)
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Closed

TI 2515/188	TI	Inspection of Near Term Task Force Recommendation 2.3 Seismic Walkdown (4OA5.3)
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Discussed

TI 2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5.2)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

0-OSP-ZZ-001 Cold Weather Preparation, Rev. 13
0-EPM-1303-01 Freeze Protection Inspection, Rev. 20

Corrective Actions

CR446527, CR498898, CR451875, CR499448, CR499455, CR499509, CR499513, CR499542

Section 1R04: Equipment Alignment

Procedures

2-OPT-RH-003, RHR System Operability Test, Rev. 17
2-OPT-CS-006, RWST Chemical Addition Tank & Containment Spray System MOV Stroke Test, Rev. 14
1-OPT-SI-005, LHSI Pump Test, Rev. 29

Corrective Actions

CR499721, CR494284, CR423782, CR412818

Other Documents

ET NO. S-97-0372, Rev. 0, Stroke Time Acceptance Criteria for 2-CS-MOV-202A and 2-CS-MOV-202B Surry Power Station, Unit 2
11548-FM-084A, Containment Spray System, Rev. 40
11448-FM-089A, Flow/Valve Operating Numbers Diagram Safety Injection System, Rev. 61
11448-FM-089B, Flow/Valve Operating Numbers Diagram Safety Injection System, Rev. 31
11548-FM-087A, Flow/Valve Operating Numbers Diagram Residual Heat Removal System, Rev. 18
11548-FE-1M, 480V One Line Diagram, Rev. 64
11548-ESK-5G, Elementary Diagram 4160V Residual Heat Removal Pumps, Rev. 10
11548-FE-1D, 4160V One Line Diagram, Rev. 14
11548-FE-8BS, Interconnection Diagram 4160V Switchgear Emergency Bus 2J , Rev. 7
Work Order 38103208339, 84 Day Freq. PT: RWST Chem add. Tank & Cont. Spray System MOVs – OC22B
Work Order 38103210909 84 Day Freq. PT: LHSI Pump Test – OC-22A
Control Room narrative logs

Section 1R05: Fire Protection

Loss Prevention Fire Strategy Procedures

1-FS-FP-101, Unit 1 Cable Vault Penetration Area, Rev. 2
1-FS-FP-102, Unit 1 Cable Vault Tunnel, Rev. 2
1-FS-FP-103, Unit 1 Upper Cable Vault, Rev. 2
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1-FS-FP-108, Unit Relay Room, Rev. 2
1-FS-FP-124, Unit 1 Switchgear Room, Rev. 2
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 2-PT-8.4, Consequence Limiting Safeguards (Hi Train), Rev. 11
 2-GEP-RX-001, Incore Detector System for Flux Maps, Rev. 005
 2-NPT-RX-008, Startup Physics Testing, Rev. 26
 2-NPT-RX-010, Calculation of Moderator Temperature Coefficient and Limits, Rev. 3
 2-NPT-RX-005, Single Point Power Range Nuclear Instrumentation Calibration, Rev. 15
 2-NPT-RX-005, Reactor Core Flux Maps, Rev. 26

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Section 1R20: RFO and Outage Activities

Procedures

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 2-OP-FH-001, Controlling Procedure for Refueling, Rev. 30
 2-OP-RC-005, Draining the RCS from Flange Level to Mid-Nozzle (Reduced Inventory), Rev. 14
 2-OP-RC-006, Isolation and Drain of Reactor Coolant Loops, Rev. 21
 2-OP-RC-011, Pressurizer Relief Tank Operations, Rev. 31
 2-OP-RC-012, RCS Degas and Crud Burst Operations, Rev. 17
 2-OP-RC-013, Reactor Head Vent and Standpipe Operation, Rev. 13
 2-GOP-2.1, Unit Shutdown, Power Decrease from Allowable Power to less than 30% Reactor Power
 2-GOP-2.2, Unit Shutdown, Less than 30% to HSD, Rev. 42
 2-GOP-2.3, Unit Shutdown, Stabilizing at HSD, Rev. 39
 2-GOP-2.4, Unit Cooldown, HSD to 351 F, Rev. 48
 2-GOP-2.5, Unit Cooldown, 351 F to Less than 205F, Rev. 33
 2-GOP-2.6, Unit Cooldown, Less Than 205°F to Ambient, Rev. 38
 2-OPT-RC-10.2, Reactor Coolant System Cold Shutdown Inventory Balance, Rev. 13
 0-NSP-RX-001, Chi-Squared Test, Rev. 9
 2-OP-SI-001, Filling LHSI and OSRS Pump Seal Head Tanks, Rev. 9
 2-OP-SI-003, Filling the Reactor Cavity, Rev. 5
 2-OP-RX-002, Shutdown Margin (Calculated at Zero Power), Rev. 27
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 2-OP-FH-015, Manipulator Crane, Rev. 17
 0-OP-4.13, Fuel Transfer System, Rev. 10
 0-OP-4.16, Pre-Core Loading and Core Mapping Verification, Rev. 16
 2-FS-FP-134, Unit 2 Containment, Rev. 1
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Section 1R22: Surveillance TestingProcedures

2-OPT-RH-003, RHR System Operability Test, Rev. 17
 2-OPT-CS-006, RWST Chemical Addition Tank & Containment Spray System MOV Stroke Test, Rev. 14
 1-OPT-SI-005, LHSI Pump Test, Rev. 29
 2-OPT-ZZ-002, ESF Actuation with Undervoltage and Degraded Voltage - 2J Bus, Rev. 30
 0-OPT-EG-001, Number 3 Emergency Diesel Generator Monthly Start Exercise Test, Rev. 61
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 2-OPT-CT-201, Containment Isolation Valve Local Leak Rate Testing (Type C Containment Testing), Rev. 19
 2-EPT-0109-01, Station Battery 2A Pilot Cell and Bus Voltage Checks, Rev. 19

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Section 1EP4: Emergency Action Level and Emergency Plan ChangesChange Packages

Emergency Plan, Rev. 56
 Emergency Action Level Technical Bases Document

Section 1EP6: EP Drill EvaluationDocuments

Emergency Plan, Rev. 56
 Surry Power Station Emergency Action Level Matrix, Rev. 3

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
ALARA	As Low As Reasonably Achievable
ANS	Alert and Notification System Testing
CA	Corrective Action
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DEP	Emergency Response Organization Drill/Exercise Performance
DOT	Department of Transportation
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
ERO	Emergency Response Organization
HP	Health Physics
HPT	Health Physics Technician
HPAP	Health Physics Administrative Procedure
HRA	High Radiation Area
IMC	Inspection Manual Chapter
ISFSI	Independent Spent Fuel Storage Installation
JPM	Job Performance Measures
LHSI	Low Head Safety Injection
LOCA	Loss of Coolant Accident
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	Operability Determination
PARS	Publicly Available Records
PCP	Process Control Program
PI	Performance Indicator
PS	Planning Standard
QS	Quench Spray
RAB	Reactor Auxiliary Building
RCE	Root Cause Evaluation
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RFO	Refueling Outage
RP	Radiation Protection
RTP	Rated Thermal Power
RWP	Radiation Work Permit
SAMG	Severe Accident Management Guidelines
SDP	Significance Determination Process
SR	Surveillance Requirements
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VEPCO	Virginia Electric and Power Company
VHRA	Very High Radiation Area
VPAP	Virginia Power Administrative Procedure
WO	Work Order