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

July 31, 2012

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 05000280/2012003, 05000281/2012003

Dear Mr. Heacock:

On June 30, 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 July 25, 2012, 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.

Based on the results of this inspection, no findings were identified.

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: (See next page)

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Enclosure: Inspection Report 05000280/2012003, 05000281/2012003
w/Attachment: Supplemental Information

cc w/encl:
Larry Lane
Site Vice President
Surry Power Station
Virginia Electric and Power Company
Electronic Mail Distribution

B. L. (Sonny) Stanley
Director, Nuclear Safety and Licensing
Virginia Electric and Power Company
Electronic Mail Distribution

Kenny B. Sloane
Plant Manager
Surry Power Station
Virginia Electric & Power Company
Electronic Mail Distribution

Lillian M. Cuoco, Esq.
Senior Counsel
Dominion Resources Services, Inc.
Electronic Mail Distribution

Tom Huber
Director, Nuclear Licensing & Operations Support
Inssbrook Technical Center
Electronic Mail Distribution

Ginger L. Rutherford
Virginia Electric and Power Company
Electronic Mail Distribution

Virginia State Corporation Commission
Division of Energy Regulation
P.O. Box 1197
Richmond, VA 23209

Attorney General
Supreme Court Building
900 East Main Street
Richmond, VA 23219

Senior Resident Inspector
Surry Power Station
U.S. Nuclear Regulatory Commission
5850 Hog Island Rd
Surry, VA 23883

Michael M. Cline
Director
Virginia Department of Emergency Services Management
Electronic Mail Distribution

Letter to David A. Heacock from Gerald J. McCoy dated July 31, 2012

SUBJECT: SURRY POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000280/2012003, 05000281/2012003

Distribution w/encl:
C. Evans, EICS
L. Douglas, EICS
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-280, 50-281
License Nos.:	DPR-32, DPR-37
Report No:	05000280/2012003, 05000281/2012003
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	Surry Power Station, Units 1 and 2
Location:	5850 Hog Island Road Surry, VA 23883
Dates:	April 1, 2012 through June 30, 2012
Inspectors:	S. Sanchez, Senior Resident Inspector J. Nadel, Resident Inspector M. Coursey, Reactor Inspector (1R08) L. Lake, Senior Reactor Inspector (1R08) R. Hamilton, Senior Health Physicist (2RS1,2RS2,2RS4,4OA1) W. Pursley, Health Physicist (2RS3,2RS5) J. Rivera, Health Physicist (2RS2,2RS3)
Accompanied by:	A. Foli, Nuclear Safety Professional Development Program
Approved by:	Gerald J. McCoy, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2012003, 05000281/2012003; 04/01/2012–06/30/2012; Surry Power Station, Units 1 and 2; Routine Integrated Inspection Report.

The report covered a three month period of inspection by resident inspectors and region based inspectors. 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

No findings were identified.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near rated thermal power (RTP) from the beginning of the inspection period until May 6 when it was shutdown to begin a planned refuel outage. It remained offline until June 7, when the main turbine generator was synchronized to the grid. On June 8 the unit reached full RTP and operated there for the remainder of the inspection period.

Unit 2 operated at or near full RTP throughout the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Review of Offsite Power and Alternate AC Power Readiness

a. Inspection Scope

The inspectors verified that plant features, and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems were appropriate.

The inspectors reviewed the licensee's procedures affecting those areas, and the communications protocols between the transmission system operator and the nuclear power plant to verify that the appropriate information was exchanged when issues arose that could impact the offsite power system. The inspectors evaluated the readiness of the offsite and alternate AC power systems by reviewing the licensee's procedures that address measures to monitor and maintain the availability and reliability of the offsite and alternative AC power systems.

b. Findings

No findings were identified.

.2 Seasonal Readiness Reviews for Hot Weather

a. Inspection Scope

The inspectors reviewed the licensee's preparations for seasonal hot weather. Inspection focused on verification of design features and implementation of the licensee's procedure for hot weather conditions, 0-OSP-ZZ-003, "Hot Weather Preparation". The inspectors walked down key structures (i.e, the turbine and auxiliary buildings, safeguards buildings, the emergency switchgear rooms, and emergency diesel generator rooms) and verified ventilation systems were operating properly and

that area temperatures remained within design requirements as specified in the Updated Final Safety Analysis Report (UFSAR). The mitigating systems reviewed during this inspection included: the low head safety injection and containment spray pumps, the refueling water storage tanks, the emergency diesel generators, and emergency switchgear.

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 (OOS). The inspectors reviewed the functional systems descriptions, 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.

- Emergency Diesel Generator (EDG) # 1 and EDG #2 Fuel Oil Transfer Systems While EDG #3 was OOS for Breaker Testing
- Auxiliary Feedwater (AFW) Pumps 3A and 3B, and the Turbine-Driven AFW Pump on Unit 2, Including the Unit 1 AFW Crosstie Valves While Unit 1 was in a Refueling Outage
- Spent Fuel Pit Cooling While B-Train Inservice & A-Train in Standby

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 1 AFW system to verify the system was properly aligned and capable of performing its safety function, and to assess the system material condition. During the walkdown, the inspectors verified valve and 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. The plant health report, 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 (CAP) to verify equipment alignment issues were being identified and resolved.

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Fire Protection Reviews

a. Inspection Scope

The inspectors conducted tours of the seven 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," CM-AA-FPA-101, "Control of Combustible and Flammable Materials," and CM-AA-FPA-102, "Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process". 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 CAP to verify fire protection deficiencies were being identified and properly resolved.

- Unit 2 Reactor Protection System Relay Room
- Unit 1 and Unit 2 Auxiliary Building Basement
- Spent Fuel Pit Cooling Pump Area
- Unit 1 Containment
- Unit 1 AFW Pump Area
- Mechanical Equipment Room #3
- Technical Support Center Area

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities

.1 Non-Destructive Examination Activities and Welding Activities

a. Inspection Scope

From May 11 to May 25, 2012, the inspectors conducted an on-site review of the implementation of the licensee's in-service inspection (ISI) Program for monitoring degradation of the reactor coolant system; emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 1.

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, and to verify that indications and defects were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI, acceptance standards or NRC approved alternative requirement.

The inspectors directly observed or reviewed records of the following NDE 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. Inspectors also reviewed evaluations of results that were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

(1) Directly observed:

- Liquid Penetrant (PT) examinations of 3-CH-81 pipe to valve weld
- Ultrasonic (UT) examinations of 3-CH-81 pipe to valve weld

The inspectors reviewed documentation for the repair/replacement of the following pressure boundary welds. The inspectors evaluated if the licensee applied the pre-service non-destructive examinations and acceptance criteria required by the Construction Code. In addition, the inspectors reviewed the welding procedure specifications, welder qualifications, welding material certifications, and supporting weld procedure qualification records to evaluate if the weld procedures were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- Work Order 38102856653 01-SI-147-CKVALV Replace Check Valve
- Work Order 38102779113 DC SU-10-00005 Install Charging Recirc. MOV Manual Isolation Valve

b. Findings

No findings were identified.

.2 PWR Vessel Upper Head Penetration (VUHP) Inspection Activities:

a. Inspection Scope

For the licensee vessel head, a bare metal visual examination and 100% volumetric examination inspection was required this outage pursuant to 10 CFR 50.55a. The inspectors observed portions of the bare metal visual examination and volumetric examination and reviewed NDE reports for VUHPs No. 18, 29, 32, 48, and 63 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 1 refueling outage. Therefore, no NRC review was completed for these inspection procedure attributes.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control (BACC) Inspection Activities:

a. Inspection Scope

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 refueling outage. The inspectors also interviewed the BACC program owner, conducted an independent walkdown of containment to evaluate compliance with licensee's BACC program requirements, and verified that degraded or non-conforming conditions, such as boric acid leaks, were properly identified and corrected in accordance with the licensee's BACC and corrective action programs.

The inspectors reviewed the following 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.

- Boric acid on 1-CH-HCV-1303C (packing)
- Boric acid leak on 1-RH-P-1A (pump seal)
- Boric acid discovered on 1-CH-FE-1190B (bolted flange)

b. Findings

No findings were identified.

.4 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

The NRC 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 (ETSS) or other applicable performance demonstrations.
- Interviewed Eddy Current Testing (ET) data analysts and reviewed 5 samples of ET data.
- 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.
- Reviewed the licensee's repair criteria and processes.
- Primary-to-secondary leakage (e.g., SG tube leakage) was below three gallons per day, or the detection threshold, during the previous operating cycle.
- 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 the licensee's secondary side SG Foreign Object Search and Removal (FOSAR) activities. The inspectors reviewed secondary side inspections of the post sludge-lancing of SG B and C and Steam Drum inspections of SG A. Five objects were noted, two were evaluated appropriately in order to leave them within the secondary side of the steam generator. One object disintegrated upon attempts to retrieve and two objects were retrieved and documented.

- Reviewed ET personnel qualifications.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems:

a. Inspection Scope

The inspectors performed a review a sample of ISI-related problems that 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 report attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

Resident Inspector Quarterly Review

.1 Operator Observations

a. Inspection Scope

During the inspection period, the inspectors conducted observations of licensed reactor operator actions and activities to ensure that the activities were consistent with the licensee's procedures and regulatory requirements. These observations took place during both normal and off-normal plant working hours. As part of this assessment, the inspectors observed the following elements of operator performance: (1) operator compliance and use of plant procedures including technical specifications; (2) control board/in-plant component manipulations; (3) use and interpretation of plant instruments, indicators and alarms; (4) documentation of activities; (5) management and supervision of activities; and, (6) communication between crew members. The inspectors observed and assessed licensed operator performance during the following events:

- Unit 2 Yellow Risk for Engineered Safeguards Feature (ESF) Relay Replacement
- Unit 1 Ramp Offline Prior to Refueling Outage
- Unit 1 Ramp from 90% to 100% following High Pressure Heater Drain Pump Swap

- Reactivity Manipulations, including Post Outage Rod Calibrations and Routine Dilutions

b. Findings

No findings were identified

.2 Licensed Operator Requalification-Simulator

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of April 23, 2012, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." Evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1998, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed one crew during the performance of the operating tests. Documentation reviewed included simulator scenarios, licensee procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, and licensed operator qualification records. The records were inspected using the criteria listed in Inspection Procedure 71111.11, "Licensed Operator Requalification Program."

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the two 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, “Maintenance Rule Program,” and ER-AA-MRL-100, “Implementing the Maintenance Rule”.

- CR 473029, Bearing Cooling Pump Issues, Apparent Bearing Failure
- CR 477420, Failure and Common Cause Analysis of EDG #1 Left Bank Air Start Solenoid Operated Valve Failure

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 CAP to verify deficiencies in risk assessments were being identified and properly resolved.

- Green Risk with Emergency Service Water Pump 1B OOS for Maintenance and Unit 2 Circulating Water Piping Flood Shield 200B Replacement.
- Yellow Risk on Unit 1 While in Cold Shutdown During Logic Testing with a 9.6 Minute Time to Core Boiling
- Yellow Risk on Unit 1 While the Reactor Coolant System (RCS) was in Decreased Inventory
- Yellow Risk on Unit 2 for ESF Relay Replacement
- Yellow Risk on Unit 2 When the Common Emergency Switchgear Room Door was Blocked Open Due to an Ink Pen Lodged in the Door Sweep
- Yellow Risk on Unit 1 and Green Risk on Unit 2 During Period of Lowered RCS Inventory with EDG #1 Inoperable Due to Air Start Motor Failure

b. Findings

No findings were identified.

1R15 Operability Evaluations

.1 Inspector Review

a. Inspection Scope

The inspectors reviewed the eight 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, "Operability Determination". The inspectors reviewed the licensee's CAP to verify deficiencies in operability determinations were being identified and corrected.

- CR 471154, Battery Charger 1A-2 Failure
- CR 471882, Motor-Driven AFW Pump 2-FW-P-3B High Inboard Motor Bearing Temperature
- CR 477489, High Particulates in 1-FW-P-3B Motor Bearing Oil Samples
- CR 473774, Unit 2 A and B Batteries Missed Surveillance Test
- CR 469133, 1A and 1B Emergency Service Water Pumps Identified with Wrong Model DC Batteries
- CR 467508 (OD 472), Power Range Nuclear Instrument N-44 Long Term Signal Degradation
- CR 473353, Component Cooling Pipe with Less than Minimum Wall Thickness
- OD 472, N44 Detector Output Current Degrading Trend

b. Findings

No findings were identified.

1R18 Plant Modifications

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed temporary modification S2-12-111, "Electrical Jumper Installation to Support Replacement of Relay 2-SI-RLY-LTAB", to verify that the modification did not affect system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the temporary modification was in accordance with CM-AA-TDC-204, "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.

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. 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”.

- WO 38103079737, AFW Isolation Valve for Steam Generator “A” Motor Operated Valve (MOV) Overhaul (1-FW-MOV-151E)
- WO 38103086076, Valve 1-CH-MOV-1115D Overhaul and Testing
- WO 38103241437, EDG #1 Left Bank Air Start Motors and Solenoid Valve Replacement
- WO 38102968513, Emergency Service Water Pump 1B Maintenance
- WO 38103130889, Loop Stop Valve 1-RC-MOV-1590 Overhaul
- WO 38103227051, High Steam Flow with Low Temperature (Tavg) Auto Actuation Logic Relay Replacement

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

Unit 1 Refueling Outage

a. Inspection Scope

The inspectors reviewed the outage safety review and related contingency plans for the Unit 1 refueling outage, which began on May 6, 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.
- 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 outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the seven 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-CH-003, "C" Charging Pump Surveillance Test

Containment Isolation Valve:

- 1-OPT-CT-201, "Containment Isolation Valve Local Leak Rate Testing (Type C Containment Testing)," Revision 21, Penetration 64

Surveillance Testing:

- 1-OPT-ZZ-002, ESF Actuation with Undervoltage and Degraded Voltage - 1J Bus
- 1-PT-8.5, Consequence Limiting Safeguards Logic (Hi-Hi Train)
- 0-NSP-CW-001, Intake Canal Level Probe Cleaning
- 0-OPT-EG-001, EDG #3 Monthly Surveillance Test
- 2-EPT-0102-01, 02, Monthly Battery Surveillance

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

2RS1 Radiological Hazard Assessment and Exposure Controls

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

a. Inspection Scope

Hazard Assessment and Instructions to workers During facility tours, the inspectors observed labeling of radioactive material, postings for radiation areas and high radiation areas (HRAs) in the radiologically controlled area (RCA), and radioactive waste (radwaste) processing and storage locations. The inspectors reviewed survey records for several plant areas including surveys for alpha emitters, hot particles, airborne radioactivity, gamma surveys within areas of high dose rate gradients, and pre-job surveys for upcoming tasks. Inspectors independently surveyed areas in the plant and compared results to radiological conditions and postings in the plant. Inspectors also reviewed air sample records and observed work in potential airborne areas to assess the location of air monitors.

The inspectors discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. Inspectors attended pre-job briefings for selected tasks and reviewed Radiation Work Permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers. RWPs for work in airborne areas were also reviewed to assess airborne radioactive controls and monitoring.

Hazard Control and Work Practices The inspectors evaluated access barrier effectiveness including key control for selected U1 and U2 Locked High Radiation Area (LHRA) and Very High Radiation Areas (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with Health Physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the Spent Fuel Pool (SFP) were reviewed and discussed. Areas where dose rates could change significantly as a result of plant shutdown and refueling operations were also discussed.

Occupational workers' adherence to selected RWPs and HP technician (HPT) proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic Dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for jobs in lower containment and the lower annulus. ED alarm logs were reviewed and worker response to dose and dose rate alarms during selected work activities was evaluated. HPT coverage and actions at the Unit 1 containment access point were reviewed and discussed in detail.

Control of Radioactive Material The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. In addition, the inspector reviewed controls for hand surveying large tools and equipment for release from the RCA and the PA. The inspectors also reviewed source inventory and discussed leak tests for selected sealed sources, and discussed nationally tracked source transactions with licensee staff.

Problem Identification and Resolution The inspectors reviewed selected Condition Reports associated with radiological hazard assessment and control. The reviewed items included CRs, self-assessments, and quality assurance audit documents. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-200, Corrective Action, Revision 18.

Radiation protection activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; Technical Specification Section 6.4 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 Section 2RS1 of the Attachment.

The inspectors completed all specified line-items detailed in Inspection Procedure (IP) 71124.01.

b. Findings

No findings were identified.

2RS2 As Low As Reasonably Achievable (ALARA)

a. Inspection Scope

ALARA Program Status The inspectors reviewed and discussed plant exposure history and current trends, including the site's Three-Year Rolling Average (TYRA) collective exposure history for calendar year (CY) 2008 through CY 2010. Current and proposed activities to manage site collective exposure and trends regarding collective exposure were evaluated through review of previous TYRA collective exposure data and review of

the licensee's 5-year ALARA program implementation plan. The inspectors reviewed the licensee's implementation of the use of temporary shielding as an ALARA tool. Current ALARA program guidance regarding estimating and tracking exposure were discussed and evaluated.

Radiological Work Planning The inspectors reviewed planned work activities and their collective exposure estimates for the current Unit 1 Refueling Outage (RFO). Work activities, exposure estimates and mitigation activities were reviewed for the following high collective exposure tasks: reactor disassembly and re-assembly, routine scaffold activities, and loop stop valve maintenance. For the selected tasks, the inspectors reviewed dose mitigation actions and established dose goals. During the inspection, use of remote technologies including teledosimetry and remote visual monitoring were verified as specified in RWP or procedural guidance. Current collective dose data for selected tasks were compared with established estimates and, where applicable, changes to established estimates were discussed with responsible licensee ALARA Planning representatives. The inspectors reviewed previous post-job reviews conducted for the U2 RFO and verified that the items were entered into the licensee's corrective action program for evaluation.

Verification of Dose Estimates and Exposure Tracking Systems The inspectors reviewed select ALARA work packages and discussed assumptions with responsible planning personal regarding the bases for the current estimates. The licensee's on-line RWP cumulative dose data bases used to track and trend current personal and cumulative exposure data and/or to trigger additional ALARA Planning activities in accordance with current procedures were reviewed and discussed. Selected work-in-progress reviews for work activities and adjustments to cumulative exposure estimate data were evaluated against work scope changes or unanticipated elevated dose rates.

Source Term Reduction and Control The inspectors reviewed historical dose rate trends for shutdown chemistry, cleanup, and resultant chemistry and radiation protection trend-point data against the current U1 RFO data. Licensee actions to mitigate source term during shutdown were discussed in detail.

Problem Identification and Resolution The inspectors reviewed and discussed selected CRs associated with ALARA program implementation. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedure PI-AA-200, Corrective Action, Rev. 18.

The licensee's ALARA program activities and results were evaluated against the requirements of UFSAR Section 11.3; Technical Specification Section 6.4; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Section 2RS2 of the Attachment.

Radiation worker performance was reviewed as part of observations conducted for IP 71124.01 and is documented in section 2RS1.

The inspectors completed all specified line-items detailed in IP 71124.02.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity during the refueling outage including the use of Containment Purge and Auxiliary Ventilation systems. The inspectors observed the use of high efficiency particulate air ventilation and vacuums to control contamination during surface disturbing work. The inspectors evaluated the effectiveness of continuous air monitors (CAMs) and air samplers placed in work areas to provide indication of increasing airborne levels and discussed with licensee how they incorporated the plant's potential alpha hazard into action levels for air sampling results and set points for CAMs. The inspectors reviewed air sample logs and records of internal contamination as indicators for effectiveness of engineering controls.

Use of Respiratory Protection Devices The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included a review of devices used for routine tasks and devices stored for use in emergency situations.

The inspectors reviewed ALARA evaluations performed to justify the use of respiratory devices. In addition, the inspectors evaluated the licensee procedures and processes in place to evaluate the effectiveness of respiratory protection.

A sample of respiratory protection devices including Self-Contained Breathing Apparatus (SCBA) units, negative pressure respirators, Powered Air Purifying Respirators and Powered Air Purifying Hoods staged for routine and emergency use in the Main Control Room and other locations was reviewed for National Institute for Occupation Safety and Health certifications.

The inspectors reviewed records of air quality testing for supplied-air devices and SCBA bottles. Medical qualifications for a sample of respiratory qualified plant staff were verified. Due to limited respirator use during the period of inspection, the training records and training program for respiratory protection users were reviewed and discussed with the licensee for various types of respiratory protection devices. The inspectors walked-down respirator issue and storage locations and observed material condition and number and type of units available. Records of monthly inventory and inspection of the equipment were also reviewed by the inspectors. Inspectors walked down areas where compressors were in use and discussed with licensee controls to prevent contamination of air supplied to bottles.

Self-Contained Breathing Apparatus for Emergency Use The inspectors reviewed the status and surveillance records of SCBAs staged for in-plant use during emergencies through review of records and walk-down of SCBAs staged in the control room, technical

support center, and operations support center. Through interviews and observation the inspectors evaluated whether users were knowledgeable of storage locations of SCBAs, spare masks, and vision correction, as well as how to don and use the equipment and the requirement to be clean shaven. The ability to fill and transport bottles to the control room during an emergency was assessed by the inspectors.

Selected maintenance records for SCBA units and air cylinder hydrostatic testing documentation were reviewed for the last 2 years. The inspectors verified that selected individuals qualified for SCBA use had completed the required training, fit-tests, and medical evaluations. In addition, manufacturer certifications for individuals responsible or testing and repairing SCBA vital components were reviewed.

Problem Identification and Resolution Licensee CAP documents associated with the control and mitigation of in-plant radioactivity were reviewed and assessed. This included review of selected CRs related to use of respiratory protection devices including SCBA. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-200, Corrective Action, Rev. 18. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2RS3 of the Attachment.

Radiation protection activities were evaluated against the requirements UFSAR Section 11; 10 CFR Parts 19 and 20; Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection; and approved licensee procedures. Records reviewed are listed in Section 2RS3 of the Attachment.

The inspectors completed all specified line-items detailed in IP 71124.03.

b. Findings

No findings of significance were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

External Dosimetry The inspectors reviewed and discussed RP program guidance for monitoring external and internal radiation exposures of occupational workers. The inspectors verified National Voluntary Laboratory Accreditation Program certification data and discussed program guidance for storage, processing and results for active and passive personnel dosimeters currently in use. ED and thermoluminescent dosimeter data were reviewed and discussed.

Internal Dosimetry Program guidance, instrument detection capabilities, and select results for internally deposited radionuclides were reviewed in detail. The inspectors reviewed dose assessments for declared pregnant workers. Detection capabilities for

passive monitoring equipment were review and discussed. Guidance for initiating tritium monitoring and bioassays for selected work activities were reviewed and discussed.

Special Dosimetric Situations The inspectors reviewed monitoring conducted and results for special dosimetric situations. The methodology and results of monitoring occupational workers within non-uniform external dose fields and assignment of effective dose equivalent results for selected activities during previous outages were discussed in detail. In addition, the adequacy of dosimetry program guidance and its implementation for shallow dose assessments and supporting calculations for personnel involved in selected personnel contamination events were evaluated. Neutron monitoring guidance and results for ISFSI activities were reviewed and discussed. The inspectors discussed and reviewed program guidance, monitoring activities, and results for declared pregnant workers documented in licensee records since January 1, 2011. Radiation Protection program staff proficiency involved in conducting skin dose assessments, neutron monitoring, and WBC equipment operations were evaluated through direct interviews, onsite observations, and review and discussions of completed records and supporting data.

Problem Identification and Resolution The inspectors reviewed and discussed selected Corrective Action Program (CAP) documents associated with occupational dose assessment. The reviewed items included Condition Report (CR) documents, self-assessments, and quality assurance audit documents. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee Administrative Procedure PI-AA-200, Corrective Action, Rev. 18.

RP program occupational dose assessment guidance and activities were evaluated against the requirements of the UFSAR Section 11; Technical Specification Section 6.4.B, Unit Operating Procedures and Programs (Personnel Radiation Protection); 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Sections 2RS1, 2RS4, and 4OA1 of the report Attachment.

The inspectors completed all specified line-items detailed in IP 71124.04.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation

a. Inspection Scope

Radiation Monitoring Instrumentation During tours of the auxiliary building, fuel building, Reactor Building and RCA exit point, the inspectors observed installed radiation detection equipment including the following instrument types: area radiation monitors (ARM), continuous air monitors (CAM), liquid and gaseous effluent monitors, personnel contamination monitors (PCM), small article monitors (SAM), and portal monitors (PM).

The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with UFSAR requirements.

In addition to equipment walk-downs, the inspectors observed or reviewed source checks and alarm set point testing of various portable and fixed detection instruments, including ion chambers, telepoles, PCMs, SAMs, and PMs, and a whole body counter (WBC). For the portable instruments, the inspectors observed the use of a high-range calibrator and discussed periodic output value testing with a radiation protection technician. The inspectors reviewed calibration records and evaluated alarm set point values for selected ARM, PCM, PM, SAM, effluent monitors, laboratory counting systems, and WBC systems. This included a sampling of instruments used for post-accident monitoring such as containment high-range ARMs, and effluent monitor high-range noble gas and iodine channels. The radioactive source used to calibrate an effluent monitor was evaluated for traceability to national standards. Calibration stickers on portable survey instruments and air samplers were noted during inspection of storage areas for ready-to-use equipment and instruments located throughout the plant. The most recent 10 CFR Part 61 analysis for dry active waste was reviewed to determine if calibration and check sources are representative of the plant source term. The inspectors also reviewed count room quality assurance records for gamma spectroscopy equipment, liquid scintillation counters, and gross alpha/beta counters.

Effectiveness and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; UFSAR Chapter 11; and applicable licensee procedures. Documents reviewed during the inspection are listed in section 2RS5 of the report Attachment.

Problem Identification and Resolution The inspectors reviewed and discussed selected CAP documents associated with radiological instrumentation including the results of self assessment #SAR001332 The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve identified issues in accordance with licensee procedure PI-AA-200, Corrective Action, Rev. 18. Documents reviewed are listed in section 2RS5 of the Attachment to this report.

The inspectors completed 1 sample as required by IP 71124.05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Quarterly Resident Inspector Performance Indicator Verification

a. Inspection Scope

The inspectors performed a periodic review of the following six Unit 1 and 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". 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 April 1, 2011, through March 31, 2012. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

- Unit 1 and 2 Safety System Functional Failures
- Unit 1 and 2 RCS Specific Activity
- Unit 1 and 2 RCS Leak Rate

b. Findings

No findings were identified.

.2 Radiation Protection Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data for the PIs listed below. To verify the accuracy of the PI data reported during the period reviewed, PI definitions and guidance contained in NEI 99-02, Regulatory Assessment Indicator Guideline, Rev. 6, were used to verify the basis for each data element.

Occupational Radiation Safety (OS) Cornerstone

The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the OS Cornerstone from January 2011, to April 2012. For the assessment period, the inspectors reviewed ED alarm logs and selected CRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in sections 2RS1 and 4OA1 of the Attachment.

Public Radiation Safety (PS) Cornerstone

The inspectors reviewed the Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences PI results from January 2011, through April 2012. The inspectors reviewed CRs, effluent dose data, and licensee procedural guidance for classifying and reporting PI events. The inspectors also interviewed licensee personnel responsible for collecting and reporting the PI data. Reviewed documents are listed in Section 4OA1 of the Attachment.

The inspectors completed the two required Radiation Protection related samples for IP 71151.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

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

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 CR 466407: N44 Detector Current Degradation

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR 466407, which identified that the output current of the N44 power range nuclear instrument on Unit 2 had been slowly degrading over a period of approximately nine months. The inspectors also reviewed Operability Determination 472, which was assigned because of this issue. The inspectors reviewed the associated CAP documents 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 specifically evaluated the subject documents against the performance attributes in section 03.06 of inspection Procedure 71152, "Problem Identification and Resolution." The inspectors also evaluated the CAP documents against the requirements of the licensee's Correction Action Program as specified in procedure, PI-AA-200, "Corrective Action Program," and 10 CFR 50, Appendix B. Interviews were also conducted with multiple licensee personnel.

b. Assessment and Observations

No findings of significance were identified. In general, the licensee was thorough and comprehensive in the assessment of the degraded condition. Input was solicited and received from System Engineering, Reactor Engineering, and the Vendor. The corrective actions, in general, were appropriate to the circumstances. The continued monitoring of the channel by System Engineering and the monthly calibration performed by Reactor Engineering were regarded as especially important to ensure that the functionality of the power range instrument is not affected by this degraded condition.

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.

4OA6 Meetings, Including Exit

.1 Resident Inspection Exit Meeting Summary

On July 25, 2012, 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.

.2 Radiation Protection Inspection Exit Meeting Summary

On May 24th, 2012, the inspectors discussed results of the onsite radiation protection inspection with Mr. L. Lane, Site Vice-President, and other licensee representatives. The inspectors noted that proprietary information was reviewed during the course of the inspection but would not be included in the documented report.

.3 Post Approval License Renewal Inspection Exit Meeting Summary

On May 18, 2012, an exit meeting was conducted to discuss the findings of this inspection. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

.4 Steam Generator Inservice Inspection Exit Meeting Summary

On March 25, 2012, an exit meeting was conducted to discuss the findings of this inspection. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Adams, Director, Station Engineering
J. Ashley, Licensing Engineer
L. Lane, Site Vice President
P. Blasioli, Director, Nuclear Protection Services & Emergency Preparedness
D. Boone, Supervisor, Exposure Control
G. Canter, Respiratory Protection Program Manager
E. Collins, Manager, Emergency Preparedness
J. Eggart, Manager, Radiation Protection & Chemistry
B. Garber, Supervisor, Station Licensing
P. Harris, Supervisor, Radiation Analysis and Instrumentation
L. Hilbert , Manager, Outage and Planning
B. Hoffner, Manager, Nuclear Fleet Emergency Preparedness
R. Johnson, Manager, Operations
T. Mayer, SG Program Manager
C. Olsen, Manager, Site Engineering
L. Ragland, Supervisor, HP Operations
K. Sloane, Plant Manager (Nuclear)
M. Smith, Manager, Nuclear Oversight
B. Stanley, Director, Station Safety and Licensing
M. True, ISI and Boric Acid
E. Turko, NDE Supervisor
N. Turner, Supervisor, Emergency Preparedness
D. Valdivieso, Repair/Replacement Coordinator
M. Wilda, Supervisor, Auxiliary Systems
J. Wright, Supervisor, ALARA

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

NRC Operating Experience Smart Sample (OpESS) 2012-01 High Wind Generated Missile Hazards

Section 1R08: Inservice Inspection Activities

Procedures
1-NPT-RC-002, Inspection of Class 1 Bolted Connections, Rev. 07
1-OPT-RC-10.1, REACTOR Coolant Leakage Walkdown at Cold Shutdown, Rev. 10
ER-AA-NDE-PT-300, ASME Section XI Liquid Penetrant Examination Procedure, Rev. 06
ER-AA-NDE-VT-604, Visual Examination (VE) for Leakage of PWR Reactor Head Penetrations, Rev. 02
ER-AP-BAC-101, Boric Acid Corrosion Control Program (BACCP) Inspections, Rev. 07
ER-AP-BAC-101, Boric Acid Corrosion Control Program (BACCP) Evaluations, Rev. 07
SRY-SGPMS-02, Surry 1R24 Site Specific Eddy Current Analysis Guidelines, Rev. 18
EOC23/REOC18, Stem Generator Condition Monitoring and Operational Assessment Surry Unit 1 November 2010 Refueling Outage, Rev. 0
54-ISI-400-200, Multi-Frequency Eddy Current Examination of Tubing, dated July 27, 2011
03-9177821 Secondary Side Visual Inspection Plan and Procedure for Dominion, Surry 1R24, Rev. 0
54-ISI-493-005, Multi-Frequency Rotating Eddy Current Examination of Thick-walled Tubular Products, dated February 21, 2011

Calculations
None

Corrective Action Documents
CR 423253 Boric acid leak on 1-RH-P-1A (pump seal)
CR 423256 Boric acid discovered on 1-CH-FE-1190B (bolted flange)
CR 431417 Dry boric acid in vicinity of 1-CH-P-2C and 1-CH-94
CR415934 ASME Code requirements for DC SU-09-01026
CR453845 ASME Section XI Containment Concrete IWL Inspection delayed

CR 476520 Foreign object identified during FOSAR inspection
CR 476486 Items found in AREVA sludge lance strainer basket
CR 476209 Steam Generator Riser Barrel Discoloration
CR 475619 Boric Acid Evaluation
CR 475256 Unit One Containment Liner Discoloration behind Aux. Feed Header - 47 ft. level
CR 475223 Boric acid on 1-CH-HCV-1303C (packing)
CR initiated as a result of the NRC inspection

Other
Work Order 38102856653 01-SI-147-CKVALV Replace Check Valve
Work Order 38102779113 DC SU-10-00005 Install Charging Recirc. MOV Manual Isolation Valve MOD (01-CH-758)
Welder Certifications for Work Order 38102856653
Welder Certifications for Work Order 38102779113
NDE Personnel Certifications for Work Order 38102856653
NDE Personnel Certifications for Work Order 38102779113
NDE Personnel Certifications for Work Order 38103076455
Liquid Penetrant Examination Record Sheet for 3-CH-81 pipe-valve
Ultrasonic calibration/Examination Record Sheet for 3-CH-81 pipe-valve
Transducer Certification Record for Serial Number 00L7WL
Transducer Certification Record for Serial Number 00L9Y4
Transducer Certification Record for Serial Number 00L7WK
Ultrasonic Instrument Linearity Check for Serial Number 01XK03
In-service Inspection Plan for Components and Component Supports Fourth In-service Inspection Interval, Rev. 9
SAR000480 Boric Acid Corrosion Control Program (BACCP) Formal Self Assessment dated 10/25/2010
NDE Personnel Certifications for Reactor Vessel Head Volumetric Examinations
NDE Personnel Certifications for Reactor Vessel Head Bare Metal Visual Examinations
NDE Personnel Certifications for Reactor Vessel In Vessel Visual Examinations

Section 1R15: Operability Evaluations

NRC Operating Experience Smart Sample (OpESS) 2012/02, Revision 1, Technical Specification Interpretation and Operability Determination

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents, and Manuals

C-HP-1032.080, Controlled Area and Unrestricted Area Radiological Surveys, Rev. 9 (ISFSI)
C-HP-1032.090, Providing Job Coverage Using Remote Monitoring Technology, Rev.1
C-HP-1032.202, Radiological Informational Postings, Rev.0
C-HP-1031.333, Bartlett Remote Monitoring System, Rev. 4
C-HP-1032.051, Airborne Radioactivity Counting and Analysis, Rev. 2
HP-1032.110, Standard Radiation Monitoring and Dose Rate Trending, Rev. 0
HP-1071.021, Storing Radioactive Material outside the Protected Area, Rev. 10
C-HP-1061.010, Contaminated Injured Person Health Physics Action, Rev. 2
C-HP-1061.320, Contamination Enclosures: Use and Control, Rev.2

Records and Data

NTS Annual Inventory Report for Surry Power Station, Dated 1/9/2012
NSTS Confirmation Form 2012 Annual Inventory Reconciliation, Dated 1/9/2012
RWP 12-0-2102, RP Outage Support

RWP 12-0-2102-3, ALARA Activities
RWP 12-0-2119, Reactor Disassembly & Reassembly
RWP 12-0-2130, 1-RC-MOV-1590 Loop Stop Valve Maintenance
RWP 12-0-2111, Primary Steam Generator Eddy Current

Corrective Action Program (CAP) Documents

CR413515 Individual entered Unit 2 Containment on Wrong RWP
CR422023, Worker exited RCA with dosimeter in alarm for exposure
CR424744, Three workers received dose rate alarms while painting on liner wall
CR424763, Worker received a spurious alarm on dosimeter
CR426091, Dosimeter malfunction
CR464593, Possible radio frequency interference with alarming dosimeter

Section 2RS2: ALARA

Procedures, Guidance Documents, and Manuals

C-HP-1081.012, Radiation Work Permits: Preparing and Approving, Rev. 8
C-HP-1081.040, Radiation Work Permits: Providing HP Coverage During Work, Rev. 7
RP-AA-300, ALARA Reviews and Reports, Rev. 4

Records and Data

2011 December Monthly ALARA Report
2011 November Monthly ALARA Report
2011 U2 RFO Department Dose Breakdown
2011 U2 RFO Station Exposure Summary
2011 Unit 2 RFO Dose Delta
ALARA Plan (AP) 12-023, 1-RC-MOV-1590 Loop Stop Valve Maintenance, 4/2/12
ALARA Program Evaluation, September 2007 – July 2010
AP 12-016, Reactor Disassembly and Reassembly, 3/28/12
AP 12-018, Routine Scaffold Activities, 4/11/12
Exposure Reduction 5 Year Plan - 2011
Graph: Daily Projected vs. Daily Actual Exposure, SPS Unit 1 U1R24, 5/20/12
Graph: Dose Rate Trending Program, Auxiliary Building All Areas, 1990 through 2011 Quarterly Averages
Master Hot Spot List
Memorandum: Surry Unit 2, Cycle 23, Shutdown Chemistry and Operations Review Team Meeting
Station ALARA Goals, 12/16/10 and 12/13/11
Table: 2010 U1 RFO Dose Actual vs. Projected by RWP No.
Table: 2011 Source Term Removed
Table: 2012 U-1 Steam Generator Dose Rate Reduction
Temporary Shielding Request, 12-005, 1-RC-PCV-1455A/B Spray Valves, 5/7/12
Temporary Shielding Request, 12-018, Pressurizer Spray Line, 5/7/12
Unit 2 Refueling Outage Report, April 16, 2011 – June 17, 2011
Work in Progress ALARA Review (WIPR), Bare Head Insulation, 5/20/12

WIPR, Ctmt/Yard Coord and rigging support, 5/14/12
WIPR, 1-RC-MOV-1590, 5/18/12
WIPR, 1-RC-MOV-1590, 5/20/12
WIPR, Reactor Head Volumetric Exam, 5/11/12
WIPR, Routine surveys and equipment setup and teardown including AREVA equipment, 5/12/12
WIPR, Scaffold, 5/16/12
WIPR, S/G E/C Platform Set Up, 5/17/12
WIPR, Upper Internals Lift, 5/14/12

Corrective Action Program (CAP) Documents

CR435919, Actual dose exceeded projected on 2-SW-E-1B
CR436104, Radiation exposure exceeded task projection on clean/repair of "A" LWST
CR438788, Dose total for cask load exceeded projection
CR446893, Station exposure for week #40 exceeded projection
CR462010, Station dose for week #5 exceeded projection
CR463372, U1 outage exposure projection greater than 80 person rem

2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals

C-HP-1032.051, Airborne Radioactivity Counting and Analysis, Rev. 1
C-HP-1033.610, Eberline AMS-4, Calibration and Operation, Rev. 6
C-HP-1033.620, Portable Air Samplers, Calibration and Operation, Rev. 8
C-HP-1042.011, Respirator User Qualification, Rev. 6
C-HP-1042.122, Quantitative Fit Testing: Portacount Pro Fit Testing System, Rev. 10
C-HP-1042.151, Respirator Issue, Rev. 2
C-HP-1042.321, Powered Air-Purifying Respirator Hood Use, Rev. 2
C-HP-1042.350, Self Contained Breathing Apparatus Use, Rev. 4
C-HP-1042.510, Atmosphere-Supplying Respiratory Equipment Performance Verification, Rev.7
C-HP-1042.450, Self-Contained Breathing Apparatus Maintenance, Rev. 14
C-HP-1042.520, Respiratory Protection Program Equipment Criteria and Verification, Rev. 3
C-HP-1061.321, Portable Ventilation Systems: Use and Control, Rev. 4
C-HP-1061.322, Use of Vacuum Cleaners in the RCA, Rev. 6
RP-AA-202, Radiological Posting, Rev. 5
RP-AA-224, Airborne Radioactivity Surveys, Rev. 1
RP-AA-226, Alpha Monitoring, Rev. 1
RP-AA-230, Personnel Contamination Monitoring and Decontamination, Rev. 3
RP-AA-110, Radiological Respiratory Protection Program, Rev. 0
0-MPT-0620-10, "Charcoal Filter Laboratory Test Analysis Documentation for Ventilation Exhaust Filtration Systems.

Records and Data

Work Order #38102844194, "HEPA & Filter Sample Testing/Mandatory," performed 10-03-2011 for 01-VS-FL-100-Filter.

C-HP-1032.051, Attachment 1, Air Sample Count Room Log: Results Air Samples collected between 05-08 and 05-10-2012.
Certified Pure Breathing Air/Gas Certificate, 4/16/12
CGA E, NFPA 1500 (G-7.1, '07) Breathing Air/Gas Test Report, 4/12/12
MSA C.A.R.E. Authorized Repair Center Certificate, Registration No. AF-2556, 3/23/11
MSA C.A.R.E. Authorized Repair Center Certificate, Registration No. AM2556, 3/20/11
MSA C.A.R.E. Authorized Repair Center Certificate, Registration No. M-2556, 3/23/11
MSA OptimAir TL Training Slides
MSA SCBA Test Results, Serial No. NR247367, 2/7/12
MSA SCBA Test Results, Serial No. NR247367, 2/13/10
MSA SCBA Test Results, Serial No. NR210032, 2/7/12
MSA SCBA Test Results, Serial No. NR210032, 2/25/10
MSA SCBA Test Results, Serial No. NJ331229, 2/7/12
MSA SCBA Test Results, Serial No. NJ331229, 2/9/11
Radiological Use SCBA Inspection Record, 4/16/12
Respiratory Equipment Certification Record, TC-21C-0800, OptimAirTL, 2/1/12
TEDE ALARA Review, Cavity Decon, 2/17/12
TEDE ALARA Review, Head Insulation Removal, 2/16/12
TEDE ALARA Review, Loop Stop Valve Repair, 2/16/12
TEDE ALARA Review, Reactor Disassembly/Reassembly, 2/19/12
TEDE ALARA Review, Reactor Head Lift and Set, 2/17/12
TEDE ALARA Review, Routine Insulation Activities, 2/16/12
TEDE ALARA Review, Steam Generator Diaphram Removal and Replacement, 2/17/12
TEDE ALARA Review, Transfer canal entries/Decon transfer canal/Blind flange, 2/17/12
TEDE ALARA Review, Ventilation System Maintenance, 2/20/12

Corrective Action Program Documents

CR418762, OptimAir TL Powered Respirator air supply hose kinks and restricts air flow
CR428566, 3M Hood Supplied Air System failed to supply the expected flow
CR434178, Leaking air line on 1-OX-C-1 SCBA HP Air Compressor
CR450973, AMS-4 Continuous Air Monitor failed weekly performance check

Section 2RS4: Occupational Dose Assessment

Procedures, Guidance Documents, and Manuals

C-HP-1031.011, Exposure Control Records and Reports, Rev. 7
C-HP-1031.023, RWP Dosimetry: Exposure Control Records Support, Rev. 7
C-HP-1031.024, Administrative Dose Control, Rev. 5
C-HP-1031.025, Dosimetry Requirements for Site Restricted Areas, Rev. 5
C-HP-1031.032, Dosimetry Processing, Rev. 6
C-HP-1031.060, SRD Control and Performance Checks, Rev. 2
C-HP-1041.011, Evaluating and Tracking Intakes of Radioactive Material, Rev.6
C-HP-1041.020, DAC-Hour Determination Based on Bioassay Results, Rev. 4
C-HP-1041.021, Radionuclide Intake Determination Based on Bioassay Results, Rev. 7
C-HP-1041.025, Declared or Expected Pregnant Woman, Rev. 3
C-HP-1041.030, Urine and Fecal Samples: Collection and Analysis, Rev. 4

RP-AA-124, Dosimetry Discrepancy and ED Alarm, Rev. 2

Section 2RS5: Radiation Monitoring Instrumentation

Procedures, Guidance Documents, and Manuals

HPAP-1033, Radiation Protection Instrumentation Program, Rev 12
0-HSP-INST-001, Maintenance of Instrument Calibrators, Rev 2
C-HP-1033.021, Reference Sources for Radiation Protection Instrumentation, Rev. 0
C-HP-1033.440, NE Technology SAM-9/SAM-11 Calibration and Operation, Rev 8
C-HP-1033.532, AMP-100/200: Calibration and Operation, Rev. 2
C-HP-1033.532, MGP AMP-100/200: Calibration and Operation, Rev. 3
C-HP-1033.533, MGP TelePole: Calibration and Operation, Rev. 3
C-HP-1033.553, Health Physics Instruments, Model REM 500, Neutron Survey Meter: Calibration and Operation, Rev. 6
C-HP-1033.610, Eberline Air Monitor AMS-4 Calibration and Operation, Rev. 6
C-HP-1033.711, Eberline Personnel Monitor Model PM-7, Calibration and Operation, Rev. 2
C-HP-1091.232, Radiological Survey Program: Surveillance and Evaluation, Rev 9
C-HP-1042.230, Airborne Radioactivity Exposure Tracking, Rev 4
HP-1033.742, ARGOS-5 PAB Personnel Contamination Monitor Calibration, Revision 0
HP-3010.040, Radiation Monitoring System Setpoint Determination, Rev. 26
RP-AA-400, Portable Survey Instrumentation, Rev. 2
RP-AA-400-1001, Standard Inventory of Portable and Fixed RP Instruments, Rev. 1
VPAP-2103S, Station Administrative Procedure, Offsite Dose Calculation Manual (Surry), Rev 15

Records and Data

SAR001332, 2011 Self Assessment of Personnel Contamination Monitoring Equipment, 08/30/2011
Radiological Survey Program Evaluation, 04/21/2010
Station Electron Capture Assessment, 11/14/2009
HP-1033.148, Attachment 3, "Canberra ISOLO Check Source Response Determination, Instrument ID#16806-1, performed 02/02/2012
ARGOS-5 PAB Personnel Contamination Monitor Calibration Certificate, Instrument #1112-270, 02/10/2012
SPS Calibration Certificate-NE Technology SAM-9/SAM-11, SAM-9 Serial # 287, 11/18/11
SPS Calibration Certificate-NE Technology SAM-9/SAM-11, SAM-11 Serial # 391, 11/28/11
C-HP-1031.302, Attachment 1, Merlin Gerin DMC 2000 S Calibration Record, DAD Serial #s 202345, 044058, 199989, 201099, 203077, 200435, 12/07/2011.
Liquid Release Permit #12014.030.017.L, 05/18/2012.
Calibration Certificate – Canberra Genie/APEX, Detector 2, Serial # 3953493, 8/25/11
Calibration Certificate – Ludlum 12-4, Serial # 181336, 9/17/11
Teledyne/Brown Engineering Inc, 10 CFR Part 61, Report of Analysis, DAW 2010, Report#L44662, 01/28/11
HP-1033.015, Contamination Monitor Performance Check Record, RadEye GX #0311, 04-01 through 04-30-2012,

HP-1033.015, Contamination Monitor Performance Check Record, ARGOS-5PAB Personnel Contamination Monitor, 04-01 through 04-30-2012,
J.L Shepherd Model 89 Irradiator, Calibration Curve Data Verification, Serial Number 8283, 5/14/12
J.L Shepherd Model 89 Irradiator, Calibration Curve Data Verification, Serial Number 9175, 5/14/12
Radcal Corporation Certificates of Conformance, Control Unit 2026C, S/N 26-1498 with associated ion chambers, 05/01/12
Calibration Certificate-Eberline PM-7 Serial # 401, 04/15/10
Calibration Certificate-Eberline PCM-1C Serial # 1516, 10/17/11
Radiation Monitor Setpoint book maintained in Station Control Room
Surry RP Task 980226, Evaluation for Using PM-7s as Passive Internal Monitors at Surry Power Station, 2/26/99
Work Order 38102838754, Process Vent Normal and High Range Effluent Radiation Monitor 1-GW-RM-130 Functional Test, 03/11/11, 06/18/11 and 11/17/11
Work Order 38102370047, Process Vent Normal and High Range Effluent Radiation Monitor 1-GW-RM-130 Calibration, 09/17/09
Work Order 38103111923, RWF Liquid Effluent Monitor 01-RRM-RITS-131 Functional Test, 03/12/12
Work Order 38102782973, RWF Liquid Effluent Monitor 01-RRM-RITS-131 Calibration, 03/23/11
Work Order 38102938340, Vent Stack Radiation Monitor 01-VG-RM-104 Calibration, 01/17/12
Work Order 38102767824, Condenser Air Ejector Discharge Radiation Monitor 01-SV-RM-111 Calibration, 09/13/11
Work Order 38102430449, Condenser Air Ejector Discharge Radiation Monitor 01-SV-RM-111 Calibration, 03/23/10
Work Order 38102837377, RC Letdown High Range Radiation Monitor 01-CH-RM-118 Calibration, 03/20/12
Work Order 38102766081, Radwaste Facility Vent Stack Effluent Radiation Monitor 01-RRM-RITS-100 & 101 Calibration, 03/10/11
Work Order 38102985303, Radwaste Facility Vent Stack Effluent Radiation Monitor 01-RRM-RITS-100 & 101 Calibration, 02/16/12
Work Order 38102674654, Containment High Range Area Radiation Monitor 02-RM-RMS-227 Channel Calibration, 04/14/11
Work Order 38102332389, Containment High Range Area Radiation Monitor 02-RM-RMS-227 Detector Calibration, 11/09/09
Work Order 38102674651, Containment High Range Area Radiation Monitor 02-RM-RMS-228 Channel Calibration, 04/27/11
Work Order 38102332400, Containment High Range Area Radiation Monitor 02-RM-RMS-228 Detector Calibration, 11/09/09
Work Order 38102837237, Vent Stack No. 2 Normal and High Range Effluent Radiation Monitor 1-VG-RM-131 Calibration, 01/29/12
Work Order 38103108057, Vent Stack No. 2 Normal and High Range Effluent Radiation Monitor 1-VG-RM-131A Functional Test, 10/17/11

CAP Documents

CR321564
CR406619
CR433389
CR444739
CR446947
CR461890

Section 4OA1: Performance Indicator Verification

Procedures, Guidance Documents and Manuals

RP-AA-112, Radiation Safety Performance Indicator Reporting, Rev. 4

Records and Data Reviewed

Semiannual Radioactive Effluent Release Report –Liquid Effluent Summation-March 2012
Semiannual Radioactive Effluent Release Report –Liquid Effluent Summation April 2012
Semiannual Radioactive Effluent Release Report --Gaseous Release Report-March 2012
Semiannual Radioactive Effluent Release Report --Gaseous Release Report-April 2012

Corrective Action Program
CR 409410, Individual received error message on electronic dosimeter and it indicated 1mrem received while checking the dosimeter out.
CR412820, Worker received a dose rate alarm on alarming dosimeter.
CR 417221, Worker received a dose rate alarm on alarming dosimeter.
CR419913, Worker received a dose alarm on alarming dosimeter possible electrical interference.
CR424022, Worker received a valid dose rate alarm on alarming dosimeter.
CR424055, Worker received a valid dose rate alarm on alarming dosimeter.
CR424588, Three workers received dose rate alarms in regenerative heat exchanger room.
CR473947, Worker received a valid dose rate alarm

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
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
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