



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

July 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
05000280/2013003, 05000281/2013003**

Dear Mr. Heacock:

On June 30, 2013, the U. S. 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 10, 2013, with Mr. Douglas Lawrence 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.

No NRC-identified or self-revealing findings were identified during this inspection. However, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or 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.

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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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 05000280/2013003, 05000281/2013003
w/Attachment: Supplemental Information

cc w/encl. (See page 3)

D. Heacock

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D. Heacock

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

SUBJECT: SURRY POWER STATION - NRC INTEGRATED INSPECTION REPORT
05000280/2013 AND 05000281/2013

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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: 05000280/2013003, 05000281/2013003

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, 2013 through June 30, 2013

Inspectors: R. Cureton, Acting Senior Resident Inspector
J. Nadel, Resident Inspector
R. Hamilton, Senior Health Physicist, Sections 2RS6, 4OA1,
4OA6
R. Kellner, Health Physicist, Section 2RS7

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

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2013003, 05000281/2013003; 04/01/2013–06/30/2013; 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 health physicists. No NRC-identified or self-revealing findings were identified. 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.

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

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near rated thermal power (RTP) throughout the inspection period.

Unit 2 operated at or near 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," Revision 1. The inspectors walked down key structures (i.e, the Turbine and Auxiliary Buildings, Safeguards Buildings, the Fire Pump House, the Emergency Switchgear Rooms, and Emergency Battery Rooms) and verified 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 refueling water storage tanks, emergency diesel generators, and emergency switchgear.

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b. Findings

No findings were identified.

1R04 Equipment Alignment.1 Partial Walkdowna. Inspection Scope

The inspectors conducted five 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' train of the Unit 1 containment spray system while the 'B' train was inoperable during MOV testing (1-OPT-CS-006)
- 'B' train of the Unit 1 containment spray system while the 'A' train was inoperable during MOV testing (1-OPT-CS-006)
- 'A' train of the Unit 2 charging cooling water system while the 'B' train was inoperable for preventative maintenance. (2-OP-51.5A)
- Emergency diesel generators (EDG's) #1 & #2 while EDG #3 was out of service for 18month/6yr/12yr preventative maintenance

b. Findings

No findings were identified.

.2 Complete Walkdowna. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Number 2 EDG and the A & B trains of the EDG fuel oil transfer pumps to verify the systems were properly aligned and capable of performing their safety function, and to assess their 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. The plant health report, system drawings, condition reports, the UFSAR, and Technical Specifications were reviewed and outstanding deficiencies were verified to be properly

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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 7, 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 4. 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 Spreading Room
- Mechanical Equipment Room #1
- Mechanical Equipment Room #4
- AAC Diesel Generator Room
- Emergency Diesel Generator Room #2

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation

a. Inspection Scope

The inspectors observed an unannounced fire drill on June 25, 2013, that took place on the 27' elevation of the Auxiliary Building. The drill was observed to evaluate the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the

debrief, and took appropriate corrective actions as required. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment brought to the scene; (5) effectiveness of command and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the internal flood protection measures and procedural controls established to address potential flooding in the Unit 2 Turbine Building's basement and Mechanical Equipment Room #4. 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 installed sump pumps, and other special features such as pipe expansion joints and flood shields. 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.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors observed and evaluated a licensed operator simulator exercise given on April 30, 2013. The scenario involved a transient where the #1 governor valve drifted open as well as a seismic event and a small break loss of coolant accident. 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

a. 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.

- Observed Unit 2 control room operators start and load EDG #2 during quarterly surveillance testing.
- Observed Unit 1 control room operators starting and stopping the low head safety injection pumps during 1-OPT-SI-005.
- Observed Unit 2 control room operators load EDG #2 during monthly surveillance testing.

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," Revision 4, and ER-AA-MRL-100, "Implementing the Maintenance Rule," Revision 5.

- CR 513121, 2-VS-F-42 tripped seconds after starting
- CR 504670, 515640, 2-CS-MR-1A/B Failures

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b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, the five 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 1 risk when emergency diesel generator #1 was removed from service for planned preventative maintenance
- Unit 1 and Unit 2 risk during a severe thunderstorm warning
- Unit 1 and Unit 2 risk when the AAC diesel generator was non functional for emergent work
- Unit 1 and Unit 2 risk during a tornado watch and a flood warning
- Unit 2 emergent risk when the the Unit 2 turbine driven auxiliary feedwater pump trip throttle valve was found out of position.

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, "Operability Determination," Revisions 9 & 10. The inspectors reviewed the licensee's corrective action program to verify deficiencies in operability determinations were being identified and corrected.

- CR 511651, Fuel oil leak from 0-BFO-FL-1A/1B
- CR 515471, 1-CH-P-1C was observed to have oil covered by foam in the gearbox sight glass.
- CR 514582, Part 21-Fuel Injector failed pressure test
- CR 515133, U2 RS SW Vent Piping - Low NDE results

b. Findings:

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed seven 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.

- 0-NSP-VS-006, Rev 1, Control room envelope air conditioning flow measurement, following belt replacement on main control room air handling unit 1-VS-AC-7
- 1-PT-18.8, Rev. 35, Charging Pump Service Water Performance, following motor and pump preventative maintenance on 1-SW-P-10B
- 2-PT-18.8A, Rev. 19, Charging Pump Component Cooling Performance Test, following preventative maintenance on 2-CC-P-2B
- 0-MPM-0520-01, Rev. 15, Control Room Ventilation Damper and Damper Operator Maintenance, following damper hydraulic fluid flush.
- 0-ECM-0306-02, Rev. 54, Motor Control Center Maintenance, following planned maintenance on battery charger 1A-2 breaker 01-EP-BKR-1H1-1-5B2
- 0-MOP-VS-007, Rev. 9, Return to Service of Control Room Chiller 1-VS-E-4A, following zinc plug replacement and seal replacement on 1-VS-P-1A
- 2-OPT-CH-001, Rev. 50, Charging Pump Operability and Performance Test for 2-CH-P-1A, following scheduled preventative maintenance and lube oil flush

b. Findings

No findings were identified.

1R22 Surveillance Testinga. Inspection Scope

For the five 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:

- 1-OPT-FW-021, Rev. 4, Auxiliary Feedwater Crosstie MOV Test
- 1-OPT-CS-006, Rev. 12, RWST Chemical Addition Tank and Containment Spray System MOV Stroke Test

Surveillance Testing:

- 2-OPT-EG-001, Rev. 63. #2 Diesel Generator Monthly Start Exercise Test
- 1-EPT-0109-01, Rev. 23, Station Battery 1A Pilot Cell and Bus Voltage Checks
- 1-OSP-TM-004, Rev. 11, Turbine Trip Test

b. Findings

No findings were identified.

CORNERSTONE: Emergency Preparedness

1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed one emergency response training drill conducted on June 18, 2013, to assess licensee performance in event classification per the emergency plan, protective action recommendations, and off-site notifications. The drill required emergency plan response action be taken by personnel located in the simulator control room, the technical support center (TSC), and the local emergency operating facility (LEOF). The inspectors observed conduct of the drill from the simulator, the TSC, the LEOF, and the subsequent critique performance. This drill was included in the Emergency Response Performance Indicator Statistics.

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

Cornerstones: Public Radiation Safety

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

a. Inspection Scope:

Event and Effluent Program Reviews: The inspectors reviewed recent liquid and gaseous release permits including pre-release sampling results, effluent monitor setpoints, and public dose calculations. The inspectors reviewed the 2011 and 2012 annual effluent reports to evaluate reported doses to the public, review any anomalous events, evaluate groundwater sampling results, and to review Offsite Dose Calculation Manual (ODCM) changes. The inspectors also reviewed compensatory sampling data for time periods when selected radiation monitors were out of service.

Walk-Downs and Observations: The inspectors walked-down selected components of the gaseous and liquid radioactive waste (radwaste) processing and discharge systems. To the extent practical, the inspectors observed and evaluated the material condition of in-place waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment. Inspected components included waste monitor tanks, laundry waste tanks, evaporation equipment, waste gas decay tanks, ventilation filtration systems, vendor-supplied liquid waste processing equipment, and associated piping and valves. The inspectors interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation. The inspectors also reviewed surveillance testing records for auxiliary building ventilation filtration systems and for effluent flow rate measuring devices.

Sampling and Analyses: Quality control activities for count room equipment were discussed with HP technicians and results of the 2011 and 2012 radiochemistry cross-check program were reviewed. The inspectors discussed effluent source term evaluation and changes to effluent release points with licensee staff. Recent land use census results and meteorological data used to calculate doses to the public were evaluated as part of IP 71124.07.

Ground Water Protection: The inspectors reviewed the licensee's continued implementation of the industry's Ground Water Protection Initiative (NEI 07-07) and discussed any changes to the program. The inspectors discussed program guidance for dealing with spills, leaks, and unexpected discharges with licensee staff and reviewed recent entries into the 10 CFR 50.75(g) decommissioning file. The inspectors reviewed and discussed the licensee's program for monitoring of structures, systems, and components with the potential to release radioactive material to the environment including the liquid radwaste system, spent fuel pool liner, boron recovery valve gallery, storm drains, and refueling water storage tanks. The inspectors observed a Ground

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Water Protection Project status update meeting between various Engineering and Maintenance Department representatives. Potential effluent release points due to onsite surface water bodies were also evaluated. The inspectors discussed the possibility of installing wells in the sand layer above the engineered backfill to use for quantifying depth of penetration as well as the possibility of using them for remediation if there is appreciable activity at the deeper layer.

Radwaste system operation, effluent processing activities, and groundwater protection efforts were evaluated against requirements and guidance documented in the following: 10 CFR 20; 10 CFR 50 Appendix I; ODCM; UFSAR Section 11; RG 1.21, Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants ; RG 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I ; and TS Section 6. Procedures and records reviewed during the inspection are listed in Sections, 2RS6, and 2RS7 of the Attachment.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program (CAP) documents in the areas of gaseous and liquid effluent processing and release activities. The inspectors evaluated the licensee's ability to identify and resolve the identified issues in accordance with procedure PI-AA-200, Corrective Action, Rev. 21. The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results.

The documents reviewed are listed in Section 2RS6 of the Attachment. The inspectors completed one (1) sample as required by IP 71124.06.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Status and Results: The inspectors reviewed and discussed planned changes to the ODCM and results presented in the Annual Radiological Environmental Operating Report (AREOR) documents issued for 2011 and 2012. The REMP contract laboratory (Teledyne Brown Engineering (TBE)) cross-check program results and current procedural guidance for offsite collection, processing and analysis of airborne particulate and iodine, broadleaf vegetation, and surface water samples were reviewed and discussed. The AREOR environmental measurement results were reviewed for consistency with licensee effluent data and evaluated for radionuclide concentration trends. The inspectors reviewed and discussed detection level sensitivity requirements and results for selected environmental media analyzed by the offsite environmental laboratory.

Site Inspection and Equipment Walk-down: The inspectors discussed implementation of selected REMP monitoring and sample collection activities for atmospheric, broadleaf vegetation samples, and water and milk samples as specified in the current ODCM and applicable procedures. The inspectors observed equipment material condition and verified operability, including verification of flow rates and total sample volume results for the weekly airborne particulate filter and iodine cartridge change-outs at three atmospheric sampling stations. In addition, the inspectors discussed broadleaf vegetation sampling for selected stations. Select surface water locations were verified and sample collection discussed. Thermo-luminescent dosimeter (TLD) material condition and placement were verified by direct verification at select ODCM locations. Land use census results, actions for missed samples including compensatory measures, sediment sample collection/processing activities, and availability of replacement equipment were discussed with knowledgeable licensee staff. In addition, sample pump calibration and maintenance records for selected environmental air samplers were reviewed. The current status and completeness of the licensee's 10 CFR 50.75(g) decommissioning files were reviewed and discussed, as well as the licensee's assessment of structures, systems, and components (SSCs) that could potentially leak material into the groundwater. Additional assessment of the ground water protection program, including sampling of wells and the curtain drain systems, was completed and is documented in Section 2RS6.

Meteorological Monitoring Program: The inspectors conducted a tour of the meteorological tower and observed local data collection equipment computer used to provide local readout if required. The inspectors observed the physical condition of the tower and associated instruments and discussed equipment operability, maintenance history, and backup power supplies with responsible licensee staff. The inspectors evaluated transmission of locally generated meteorological data from the meteorological tower to the main control room operators. For the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed applicable tower instrumentation calibration records for 2012 and 2013 and evaluated meteorological measurement data recovery for 2011, 2012, and January 1 through April 30, 2013.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program (CAP) CR documents in the areas of environmental and meteorological monitoring. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with PI-AA-200, Corrective Action, Rev. 21.

Procedural guidance, program implementation, quantitative analysis sensitivities, and environmental monitoring results were reviewed against 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS Sections 6.4, and 6.6; ODCM, Rev. 15; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR Chapter 11; RG 1.23, Meteorological Monitoring Programs for Nuclear Power Plants, and ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites.

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Documents reviewed are listed in Section 2RS7 of the Attachment. The inspectors completed 1 sample as required by IP 71124.07.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Reactor Safety

a. Inspection Scope

The inspectors performed a periodic review of the 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," 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 April 1, 2012 through March 31, 2013. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

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

b. Findings

No findings were identified.

.2 Public Radiation Safety

a. Inspection Scope

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from May 2011 through May 2013. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and CRs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in sections 2RS6 and 4OA1 of the Attachment.

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 CR 479759, 1-CH-P-1C, Oil Foaming Issues

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions CR 516362, 1-CH-P-1C oil failed ASTM D 892 foam test 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 21 and 10 CFR 50, Appendix B.

b. Findings

No findings of significance 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.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 10, 2013, the inspection results were presented to Mr. Douglas Lawrence 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.

4OA7 Licensee-Identified Violations

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

- The Surry Operating License, section 3.1 "Fire Protection" requires, in part, that "the licensee shall implement and maintain in effect the provisions of the approved fire protection program as-described in the Updated Final Safety Analysis Report (UFSAR)." The UFSAR requires, in part, "that the fire protection programs (FPP) meet Appendix A to Branch Technical Position (BTP) APCS 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," dated August 23, 1976." Section B.3 of Appendix A to BTP APCS 9.5-1 requires, in part, that "Normal and abnormal conditions or other anticipated operations such as modifications (e.g., breaking fire stops, impairment of fire detection and suppression systems) and refueling activities should be reviewed by appropriate levels of management and appropriate special actions and procedures such as fire watches or temporary fire barriers implemented to assure adequate fire protection and reactor safety."

Contrary to the above, on May 3, 2013, the licensee discovered a failure to establish an adequate fire watch in the Emergency Diesel Generator Room #2 with the heat detection and low pressure carbon dioxide systems out of service while performing upgrades to the fire protection system. Specifically, when fuses were pulled on April 28, 2013, for relay replacement, the heat detection and low pressure carbon dioxide systems were rendered non-functional. The configuration occurred due to procedure 0-ECM-0903-01, Cardox Hazard Control Panel Isolation and Restoration, not being adequate in complying with the Technical Requirements Manual (TRM). The TRM section 3.3.1, Fire Detection Instrumentation, requires a fire watch to be established within an hour.

Enclosure

Additionally, TRM section 5.2, Appendix R and Fire Protection Compensatory Measures/Fire Watch Requirements, requires a fire watch to be established with a frequency of one hour with both systems being non-functional. The licensee established a shiftly fire watch due to the low pressure carbon dioxide system being non-functional, however the heat detection system was not recognized as being out of service and the appropriate hourly fire watch was not established. Review of the work determined that a period of four days was the exposure period.

Significance Determination Process (SDP) screening of the finding in accordance with NRC IMC 0609.04 determined that the finding required evaluation per IMC 0609 Appendix F, "Fire Protection Significance Determination Process," because the condition had an adverse affect on the "Fixed Fire Protection Systems" element of fire watches posted as a compensatory measure for fixed fire protection system outages or degradations. A high degradation rating was assigned to this finding. A bounding phase 3 risk evaluation was performed for this finding by a regional SRA using the guidance of IMC 0609 Appendix F and input from the NRC latest Surry model. The major assumptions of the analysis were: a 4 day exposure period, an ignition frequency for the diesel room from the Surry Individual Plant Examination of Non-Seismic External Events and Fires, a probability of non-suppression of 1.0 due to the performance deficiency, and a conditional core damage probability determined using a transient initiator and loss of equipment in the diesel room. The risk was mitigated by the short exposure period and the availability of alternate equipment to achieve safe shutdown. The risk evaluation result was an increase in core damage frequency of $<1E-6$ /year which makes this GREEN finding of very low safety significance. The licensee has documented this issue in its corrective action program as CR 514296.

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
D. Lawrence, 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

None

Opened and Closed

None

Closed

None

Discussed

None

List of Documents Reviewed

Section 1R01: Adverse Weather Protection

0-AP-10.18, Response to Grid Instability, Rev. 20
 2-OP-26.5, 500 KV Switchyard Voltage, Rev. 19
 1-OP-26.5, 230 KV Switchyard Voltage, Rev. 17

Condition Reports

CR 514151, 0-OSP-ZZ-003, (Hot Weather Preparation) completed Unsat.
 CR 421123, Hot Weather Preparation Discrepancies
 CR 510832, Low Level Switch House Ventilation Fan Inoperable
 CR 511395, U2 Cable Spreading Room AC Unit can not be reset
 CR 514106, 1-VS-F-45 would not start

Section 1R04: Equipment Alignment

Procedures

0-OP-EG-001A, Fuel Oil Storage Outside Area, Rev. 14
 1-OP-51.5A, Charging Pump CC and SW Systems Valve Alignment, Rev. 19

Drawings

11448-FB-038A, Flow/Valve Operating Numbers Diagram, Fuel Oil Lines, Rev. 49
 11448-FM-071B, Flow/Valve Operating Numbers Diagram, Circulating and Service Water System, Rev. 59

Section 1R05: Fire Protection

ETE-CEP-2011-1002, Fire Protection Program, Rev. 0.
 Surry Power Station Appendix R Report, Rev. 33
 Calculation SEO-245, August 8, 1989

Procedures:

0-FS-FP-122, Diesel Generator Room Number 2 Elevation 27 Feet – 6 Inches, Rev. 1
 0-FS-FP-173, Charging Pump Service Water Pump Room (MER4), Rev. 1
 0-FS-FP-225, Alternate AC Diesel Room Construction Site Elevation 35 Feet, Rev. 1

Section 1R06: Flood Protection

ER-SU-BDB-FLD-001, Revision 0, Walkdown of Flood Protection Features
 0-AP-13.00, Revision 26, Turbine building or MER 3 flooding
 0-MPM-1900-01, Revision 10, Periodic Inspection of Flood and Spill Protection Dikes, Dams, and Expansion Joint Shields
 0-MPM-1900-02, Revision 13, Flood Protection Floor Drain Back Water Stop Valve Replacement

Section 1R11: Licensed Operator Requalification Program

Scenario Packages:
RQ-13.3-SP-1, Rev. 0

Section 1R12: Maintenance Effectiveness

Work Orders

38103345198
38103329633
38103322208
38103267413
38103254314
38103252250
38103199757
38103175575
38103132070
38103104010

Section 1R15: Operability Evaluations

OD 00537
Engine Systems, Inc. Part 21 Report No. 10CFR21-0109

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures, Guidance Documents, and Manuals

HP-3051.020, Groundwater Protection Program, Rev. 3 and 4
PI-AA-200, Corrective Action, Rev. 21
RP-AA-502, Groundwater Protection Program, Rev. 3 and 4
VPAP-2103S, Offsite Dose Calculation Manual , Rev. 15
1-IPMVSFI 17B, 1-VS-F-58B Flow Instrumentation Calibration, Rev. 2

Records and Data Reviewed

Annual Radioactive Effluent Release Reports, 2011 and 2012
Briefing Package: Surry County Board of Supervisors on Ground Water Tritium, 5/10/2013
CA125003 Response: Surry Ground Water Protection System Assessment Summary
Graphic: Existing Monitoring Well Depths
Graphic: Proposed Monitoring Wells
Graph: Tritium in Protected Area Monitoring Wells
Ground Water Protection Project (GPP) Strategic Plan
Groundwater Monitoring Well Sample Results, March 2008-April 2013 for wells Piez-05, 06 and 29
Interlaboratory Cross Check Results 3rd Quarter 2011
Interlaboratory Cross Check Results 4th Quarter 2011
Interlaboratory Cross Check Results 1st Quarter 2012
Interlaboratory Cross Check Results 3rd Quarter 2012
Interlaboratory Cross Check Results 1st Quarter 2013
Site Hydrology Study Result.
Site Subsurface Drain Tritium Monitoring Results, 8/20/2011-4/27/2013

Work Order 38102790412, 01-VS-Loop-F-117A-Loop, 1/18/12
 Work Order 38102823981, 01-VS-Loop-F-117A-Loop, 1/20/12
 10 CFR 50.75(g) Decommissioning Records
 10 CFR 61, Vendor Laboratory Analysis Data from 2012 (5 record sets)

CAP Documents

CR457144
 CR482801
 CR487333
 CR493291
 CR499184
 CR499268
 CR510361
 CR515092

Section 2RS7: Radiological Environmental Monitoring Program (REMP)

Procedures, Guidance Documents, and Manuals

VPAP-2103S, Offsite Dose Calculation Manual (Surry), Rev. 15
 C-HP-1033.620, Portable Air Samplers Calibration and Operation, Rev. 9
 HP-3051.010, Radiological Environmental Monitoring Program, Rev. 18
 HP-3051.020, Groundwater Protection Program, Rev. 4
 0-IPM-MM-PRO-001, Primary Meteorological Tower Instrumentation Calibration, Rev. 8
 0-IPM-MM-PRO-002, Backup Meteorological Tower Instrumentation Calibration, Rev. 5

Records and Data Reviewed

Portable Air Sampler Calibration Certificates for the following Model CMP-0523-CV REMP Air samplers: S/N 8078, 01/10/12 and 01/10/13; S/N 22124, 07/09/12 and 01/07/13; S/N 22125, 07/09/12 and 01/07/13; S/N 7724, 10/23/12
 Radiological Decommissioning Records (RP-AA-503, Attachment 1 and accompanying radiological survey information) for the following: Turbine Building Sump #3 to Storm Drain, 6/18/12 - 8/9/12; 2-HS-RSV-2 (heating steam drain receiver) to storm drain, 9/17/12; 2-HS-RSV-2 (heating steam drain receiver) to storm drain, 9/23/12
 Surry Power Station Environmental Log Book for 2011, 2012, and January through June 2013
 Surry Power Station Meteorological Data Report (including meteorological data recovery percentages), 01/01/2011 through 04/30/2013
 Surry Power Station 2011 Annual Radiological Environmental Operating Report (AREOR), 04/25/2012
 Surry Power Station 2012 Annual Radiological Environmental Operating Report (AREOR), 04/26/2013
 Work Order (W/O) 38103181062, PM/CAL Back-Up Met Tower Recorder, 08/06/12
 W/O 38103181075, PM/CAL Primary Met Tower Instrumentation, 08/22/12,
 W/O 38103191655, PM Replace Wind Direction and Speed Sensors on Primary Met Tower, 02/27/13
 W/O 38103264895, PM/CAL Primary Met Tower Instrumentation, 02/27/13

CAP Documents

CR455554

CR475087

CR493797

CR499184

CR511781

CR512937

Nuclear Oversight Assessment No. 11-042-S, 2011 NRC RP Baseline Inspection Preparedness Self-Assessment, SAR001592, REMP Program Self-Assessment, 11/30/12
Self-Assessment, SAR001749, ODCM Self-Assessment

Section 40A1: Performance Indicator Verification

Procedures, Guidance Documents, and Manuals

RP-AA-111, Monitoring and Improving Radiological Performance, Rev. 2

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

PI-AA-100-1000, Performance Indicators, Rev. 4

Records and Data Reviewed

Monthly PI Reports with Associated Data, May 2011 to May 2013

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