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

November 12, 2015

Mr. Thomas D. Gatlin
Vice President - Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88
Jenkinsville, SC 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 – NRC INTEGRATED INSPECTION REPORT 05000395/2015003

Dear Mr. Gatlin:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station, Unit 1. On October 23, 2015, the NRC inspectors discussed the results of this inspection with Mr. T. Gatlin and members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented one NRC-identifed finding of very low safety significance (Green), in this report. The finding involved a violation of NRC requirements. The inspectors also documented a licensee-identified violation, which was determined to be of very low safety significance, in this report. The NRC is treating the violations as non-cited violations (NCV) consistent with Section 2.3.2.a 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 20555-001; 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 Virgil C. Summer Nuclear Station.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station, Unit 1.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, “Public Inspections, Exemptions, Requests for Withholding,” of the NRC's "Agency 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’s Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Anthony D. Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket No.: 50-395
License No.: NPF-12

Enclosure:
IR 05000395/2015003
w/Attachment: Supplementary Information

cc: Distribution via ListServ

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Letter to Thomas D. Gatlin from Anthony D. Masters dated November 12 , 2015.

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 - NRC INTEGRATED INSPECTION REPORT 05000395/2015003

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REGION II

Docket No.	50-395
License No.	NPF-12
Report Nos.	05000395/2015003
Licensee:	South Carolina Electric & Gas (SCE&G) Company
Facility:	Virgil C. Summer Nuclear Station, Unit 1
Location:	P.O. Box 88 Jenkinsville, SC 29065
Dates:	July 1, 2015, through September 30, 2015
Inspectors:	J. Reece, Senior Resident Inspector E. Coffman, Resident Inspector D. Lanyi, Sr. Operations Engineer (Section 1R11.3) A. Goldau, Operations Engineer (Section 1R11.3) R. Kellner, Senior Health Physicist (Sections 2RS6, 2RS7, 2RS8, 4OA1.2, and 4OA1.3) A. Nielsen, Senior Health Physicist (Sections 2RS6, 2RS7, 2RS8, 4OA1.2, and 4OA1.3) W. Pursley, Health Physicist (Sections 2RS6, 2RS7, 2RS8, 4OA1.2, and 4OA1.3)
Approved by:	Anthony D. Masters, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY

IR 05000395/2015003; 07/01/2015 - 09/30/2015: Virgil C. Summer Nuclear Station, Unit 1; Maintenance Risk Assessment.

The report covered a three-month period of inspection by resident inspectors. One Green NRC-identified non-cited violation (NCV) finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated April 29, 2015. The cross-cutting aspects were determined using IMC 0310, "Aspects Within the Cross Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(4) which requires in part that the licensee assess and manage the increase in risk that may result from proposed maintenance activities. Specifically, the licensee failed to assess and manage the increase in risk for emergent work on the 'B' train service water (SW) pump motor breaker. The licensee entered the problem into their corrective action program as condition report (CR) 15-03194.

  The inspectors identified a performance deficiency (PD) for the failure to assess and manage the increase in risk for work activities associated the 'B' SW pump motor breaker in accordance with 10 CFR 50.65 (a)(4). The inspectors reviewed IMC0612, Appendix B, "Issue Screening," dated September 7, 2012, and determined the PD was more than minor because it adversely impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of equipment perfomance involving availability and reliability. Specifically, the failure to identify increases in operational risk and implement risk management actions adversely affected the availability and reliability of those systems relied upon to respond to plant events. The inspectors used IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, and determined the finding was of very low safety significance or Green, because the Incremental Core Damage Probability Deficit for the timeframe the 'B' SW pump was unavailable was less than 1E-6. The inspectors reviewed IMC 0310, "Aspects Within Cross Cutting Areas," dated December 4, 2014, and determined the cause of this finding involved the cross-cutting area of human performance and the aspect of work management, H.5, because the licensee failed to assess and manage the risk commensurate with the emergent work involving the 'B' SW pump motor. (Section 1R13)

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

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at full Rated Thermal Power (RTP) and operated at or near full RTP through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three partial equipment alignment walkdowns which are listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). Correct alignment and operating conditions were determined from the applicable portions of drawings, system operating procedures (SOP), and technical specifications (TS). The inspections included review of outstanding maintenance work orders (WOs) and related condition reports (CRs) to verify that the licensee had properly identified and resolved equipment alignment problems that could lead to the initiation of an event or impact mitigating system availability.

- Partial walkdown of 'A' and 'B' service water (SW) during a yellow risk condition due to work on the 'C' SW pump
- Partial walkdown of 'A' emergency diesel generator (EDG) during planned maintenance on the 'B' EDG
- Partial walkdown of the turbine driven emergency feedwater (TDEFW) and the 'A' motor driven emergency feedwater (MDEFW) pump during planned maintenance on the 'B' MDEFW pump

b. Findings

No findings were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a detailed review and walkdown of the alternate seal injection (ASI) system to identify any discrepancies between the current operating system equipment lineup and the designed lineup. The inspectors reviewed related system operating procedures (SOP), applicable sections of the final safety analysis report (FSAR), related design basis documents, plant drawings, completed surveillance procedures, outstanding WOs, system health reports, and related condition reports (CR)

to verify that the licensee had properly identified and resolved equipment problems that could affect the availability and operability of the system. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Fire Protection Walkdowns

a. Inspection Scope

The inspectors reviewed recent CRs, WOs, and impairments associated with the fire protection system. The inspectors reviewed surveillance activities to determine whether they supported the operability and availability of the fire protection system. The inspectors assessed the material condition of the active and passive fire protection systems and features, and observed the control of transient combustibles and ignition sources. Documents reviewed are listed in the Attachment. The inspectors conducted routine inspections of the following six areas (respective fire zones also noted):

- Control building (fire zones CB-2 and CB-5)
- Battery and charger rooms 'A' and 'B' (fire zones IB-2, IB-3, IB-4, IB-5 and IB-6)
- HVAC chilled water pump rooms 'A' and 'B' (fire zones IB-7.2, IB-9 and IB-23.1)
- Intermediate building 412' elevation (fire zones IB-1 and IB-27)
- Auxiliary building 374' elevation (fire zones AB-1.1, AB-1.2 and AB-1.3)
- Auxiliary building 397'/388' elevations (fire zone AB-1.4)

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed two operator requalification annual exam scenarios occurring on July 21, 2015, and involving multiple failures leading to entry into abnormal operating procedures followed by emergency operating procedures in order to combat the problems. The inspectors observed crew performance in terms of communications; ability to prioritize failures in order to take timely and proper actions; prioritizing, interpreting, and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; and oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions and emergency action levels. The inspectors reviewed the licensee's critique comments to verify that performance deficiencies were captured for appropriate corrective action.

b. Findings

No findings were identified.

.2 Resident Quarterly Observation of Control Room Operations

a. Inspection Scope

During the inspection period, the inspectors conducted two observations of licensed reactor operator activities to ensure consistency with licensee procedures and regulatory requirements. For the two listed activities, the inspectors observed the following elements of operator performance: 1) operator compliance and use of plant procedures including TS; (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.

- 'B' EDG testing
- Moisture separator reheater relief valve testing

b. Findings

No findings were identified.

.3 Requalification Inspection

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of August 10 – 14, 2015, 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." The evaluations were 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 evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1985, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed two crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, licensed operator qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in Inspection Procedure 71111.11. Documents reviewed during the inspection are documented in the List of Documents Reviewed.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors evaluated two equipment issues described in the two CRs listed below to verify the licensee's effectiveness with the corresponding preventive or corrective maintenance associated with structure, system, and components (SSCs). The inspectors reviewed Maintenance Rule (MR) implementation to verify that component and equipment failures were identified, entered, and scoped within the MR program. Selected SSCs were reviewed to verify proper categorization and classification in accordance with 10 CFR 50.65. The inspectors examined the licensee's 10 CFR 50.65(a)(1) corrective action plans to determine if the licensee was identifying issues related to the MR at an appropriate threshold and that corrective actions were established and effective. The inspectors' review evaluated if maintenance preventable functional failures or other MR findings existed that the licensee had not identified. The inspectors reviewed the licensee's controlling procedures consisting of engineering services procedure (ES)-514, Rev. 6, "Maintenance Rule Program Implementation," and station administrative procedure (SAP)-0157, Rev. 1, "Maintenance Rule Program," to verify consistency with the MR program requirements.

- CR-15-00541 and CR-15-01494, Maintenance Rule (a)(1) goal setting is established for the reactor building (RB) spray system due to failure of XVG03005A-SP
- CR-15-03099, Nine failures for fire protection emergency lights in first six months of 2015.

b. Findings

No findings were identified relating to the maintenance rule assessments.

1R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors performed risk assessments, as appropriate, for the five scheduled work activities involving a yellow risk condition for the associated components listed below to assess, as appropriate: 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 emergent work problems were adequately identified and resolved. The inspectors evaluated the licensee's work prioritization and risk characterization to determine, as appropriate, whether necessary steps were properly planned, controlled, and executed for the planned and emergent work activities.

- Work week 29, yellow risk condition for 'C' SW pump planned maintenance
- Work week 29, yellow risk condition for emergent work on the 'B' SW pump motor breaker

- Work week 32, yellow risk condition for emergent work for inspection of 'B' SW intake screens
- Work week 33, yellow risk condition for tagout of 'B' SW pump for intake screen repair
- Work week 36, yellow risk condition for planned maintenance on the 'B' EDG

b. Findings

Failure to Manage an Increase in Risk for Emergent Work

Introduction: The inspectors identified a Green, non-cited violation (NCV) of 10 CFR 50.65 (a)(4) which requires in part that the licensee assess and manage the increase in risk that may result from proposed maintenance activities. Specifically, the licensee failed to assess and manage the increase in risk for emergent work on the 'B' train service water (SW) pump motor breaker.

Description: On July 15, 2015, during an afternoon plant status tour and training for a regional inspector, the inspectors identified ongoing work associated with the 'B' SW pump motor involving removal of an oil sample. The inspectors reviewed the associated supply breaker status, noted that the breaker was racked out of service and proceeded to the control room to review the associated risk status. Additional queries of the Work Control Center and control room staff by the inspectors revealed that the 'B' SW pump had not been entered into the licensee's risk management computer program, EOOS (Equipment Out Of Service) as required by safety-related operations administrative procedure, OAP-100.5, "Guidelines for Configuration Control and Operation of Plant Equipment," Revision 4. Further, the 'B' SW pump had not been entered into the licensee Removal and Restoration program as required by safety-related station administrative procedure, SAP-205, "Status Control and Removal and Restoration," Revision 10.

The inspectors reviewed the status of the respective, emergent work order, WO1507273, inspect and replace control power fuses, for the 'B' SW pump motor breaker and noted that the WO was signed to start work at 1339 hours and signed as field work complete at 1547 hours. The licensee subsequently determined and the inspectors verified that the emergent work would have resulted in an overall Yellow risk condition or a change in a risk category with a core damage frequency multiplier of 2.38 for the unavailability of one of the three pumps, the 'B' SW pump, that exceeded the Green to Yellow threshold multiplier of greater than 1.9. This also requires risk management actions for the placement of placards on specified, protected plant components as prescribed by OAP-114.1, "Protected Equipment Program," Revision 2. The inspectors noted that the work order, WO1502244, involving an oil sample did not require placement of the motor in an unavailable status.

The inspectors concluded that the licensee's work management process failed to assess and manage the increase in risk associated with emergent WO1507273 which was contrary to the requirements of 10 CFR 50.65 (a)(4) that requires in part that the licensee assess and manage the increase in risk resulting from proposed maintenance activities.

Analysis: The inspectors identified a performance deficiency (PD) for the failure to assess and manage the increase in risk for work activities associated the 'B' SW pump

motor breaker in accordance with 10 CFR 50.65 (a)(4). The inspectors reviewed IMC0612, Appendix B, "Issue Screening," dated September 7, 2012, and determined the PD was more than minor because it adversely impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of equipment performance involving availability and reliability. Specifically, the failure to identify increases in operational risk and implement risk management actions adversely affected the availability and reliability of those systems relied upon to respond to plant events. The inspectors used IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, and determined the finding was of very low safety significance or Green, because the Incremental Core Damage Probability Deficit for the timeframe the 'B' SW pump was unavailable was less than 1E-6. The inspectors reviewed IMC 0310, "Aspects Within Cross Cutting Areas," dated December 4, 2014, and determined the cause of this finding involved the cross-cutting area of human performance and the aspect of work management, H.5, because the licensee failed to assess and manage the risk commensurate with the emergent work involving the 'B' SW pump motor.

Enforcement: 10 CFR 50.65 (a)(4) requires in part that the licensee assess and manage the increase in risk that may result from proposed maintenance activities. Contrary to this, on July 15, 2015, the licensee failed to assess and manage the increase in risk that resulted from implementation of emergent work on the 'B' SW pump motor breaker. Because the finding is of very low safety significance and because it has been entered into the licensee's corrective action program (CAP) as CR-15-03194, this violation is being treated as a Green NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000395/2015003-01, Failure to Assess and Manage Risk Associated with Emergent Work.

1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed the four operability evaluations listed below, affecting risk significant mitigating systems to assess, as appropriate: 1) the technical adequacy of the evaluations; 2) whether operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred; 3) whether other existing degraded conditions were considered; 4) that the licensee considered other degraded conditions and their impact on compensatory measures for the condition being evaluated; and 5) the impact on TS limiting conditions for operations and the risk significance in accordance with the significance determination process. The inspectors verified that the operability evaluations were performed in accordance with SAP-209, Rev. 1B, "Operability Determination Process," and SAP-999, Rev. 13A, "Corrective Action Program." Documents reviewed are listed in the Attachment.

- CR-14-06439 and CR-15-00541, MVG-3005A (RB SP sump isolation) did not fully stroke open
- CR-15-00666, Component cooling water (CCW) 'B' train pipe strut, CCH-117, rotated greater than allowable
- CR-15-01012, Evaluate operability of SW screen wash system with only balance of plant power to the respective control panel

- CR-15-02337, Evaluate operability of 'A' MDEFW with metal particles discovered in outboard bearing oil

b. Findings

The enforcement aspects regarding CR-15-00541 are discussed in section 4OA2.2.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed one permanent modification or engineering change request (ECR) as noted below, to evaluate the change for adverse effects on system availability, reliability, and functional capability. Documents reviewed included engineering calculations, WOs, site drawings, applicable sections of the UFSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and UFSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors reviewed any related CRs to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

- Permanent modification for ECR-72027, replacement of Gould ITE 222A1175 Relay with ABB A22B1275 Relay for emergency diesel generators

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the six maintenance activities listed below, the inspectors reviewed the associated post-maintenance testing (PMT) procedures and either witnessed the testing and/or reviewed test records 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) test 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 its safety function. The inspectors verified that these activities were performed in accordance with general test procedure, (GTP)-214, "Post Maintenance Testing Guideline," Rev. 5E.

- WO1504572, replace SW piping upstream of flow instrument IFI04425
- WO1507273, inspect 'B' SW motor breaker control power fuses for cracked ferrules and replace as necessary
- WO1413049, replace inboard 'B' CCW pump seal

- WO1417380, replace oil lines on the 'B' charging/safety injection pump
- WO1505640, repair emergency air reservoir drain valve leakage for TDEFW supply flow control valve
- WO1404609, EDG minimum frequency relay replacement

b. Findings

The enforcement aspects involving WO1507273 are discussed in Section 1R13 of this report.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed the five surveillance test procedures (STPs) listed below to verify that TS or risk significant surveillance requirements were followed and that test acceptance criteria were properly specified to ensure that the equipment could perform its intended safety function. The inspectors verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria were met.

In-Service Tests

- STP-225.001C, "Diesel Generator Support Systems Comprehensive Pump and Valve Test," Rev. 2
- STP-223.002A, "Service Water Pump Test," Rev. 10B
- STP-222-002, "Component Cooling Pump Test," Rev. 10A
- STP-205.004, "RHR Pump and Valve Operability Test," Rev. 9B

Reactor Coolant System

- STP-114.002, "Operational Leakage Calculation," Rev. 12F

b. Findings

No findings were identified.

1EP6 Drill Evaluation

Emergency Preparedness Drill

a. Inspection Scope

On August 19, 2015, the inspectors reviewed and observed the performance of an emergency preparedness (EP) drill that involved a breaker fault and subsequent loss of an emergency bus, a spent fuel pool cooling system leak, a leak of an onsite hazardous gas, a steam generator fault resulting in a reactor trip and safety injection with miscellaneous component failures, and an earthquake causing fuel damage and a loss of the containment barrier, which required entry into increasing emergency action levels starting with an Notification of Unusual Event and ending in a General Emergency. The inspectors assessed abnormal and emergency procedure usage, emergency plan

classifications, protective action recommendations, respective notifications and the adequacy of the licensee's drill critique. The inspectors verified that drill deficiencies were captured into the licensee's corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

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

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

a. Inspection Scope

Radioactive Effluent Treatment Systems: The inspectors walked-down selected components of the gaseous and liquid radioactive waste (radwaste) processing and effluent 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 liquid holding tanks, air cleaning systems, effluent monitoring equipment, and associated piping and valves. The inspectors interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation. The inspectors reviewed surveillance testing records for auxiliary building exhaust filtration systems.

Effluent Sampling and Release: The inspectors observed the collection and processing of a reactor building purge sample and two liquid releases from two of the plant's waste monitor tanks. The inspectors reviewed recent liquid and gaseous release permits including pre-release sampling results, effluent monitor alarm setpoints, and public dose calculations. The inspectors reviewed the 2012, 2013 and 2014 Annual Radioactive Effluent Reports to evaluate reported doses to the public, to review any anomalous results, and to review Offsite Dose Calculation Manual (ODCM) changes. The inspectors reviewed special reports submitted for radiation monitors that were out of service and associated compensatory sampling records. The inspectors reviewed results of the 2013 and 2014 radiochemistry cross-check program. The inspectors reviewed effluent source term evaluation and changes to effluent release points. The inspectors evaluated recent land use census results and meteorological data used to calculate doses to the public.

Ground Water Protection: The licensee's implementation of the Industry Ground Water Protection Initiative was reviewed for changes since the last inspection. Groundwater sampling results obtained since the last inspection were reviewed. Licensee response, evaluation, and follow-up to spills and leaks since the last inspection were reviewed in detail. Records reviewed are listed in the report Attachment.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program documents in the areas of gaseous and liquid effluent processing and release activities. The inspectors evaluated the licensee's ability to identify,

characterize, prioritize, and resolve the identified issues in accordance with procedure SAP-0999, “Corrective Action Program”, Rev. 13. The inspectors discussed the scope of the licensee’s internal audit program and reviewed recent assessment results.

Radwaste system operation and effluent processing activities were evaluated against requirements and guidance documented in the following: 10 CFR Part 20; 10 CFR Part 50 Appendix I; ODCM; Final Safety Analysis Report (FSAR) Sections 11 and 12; Regulatory Guide (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”; NUREG-0133, “Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants: A Guidance Manual for Users of Standard Technical Specifications”; and Technical Specifications (TS) Section 6. Procedures and records reviewed during the inspection are listed in the report Attachment.

The inspectors completed all specified line-items detailed in Inspection Procedure (IP) 71124.06 (sample size of 1).

b. Findings

No findings identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Status and Results: The inspectors reviewed and discussed changes to the ODCM and REMP results presented in the Annual Radiological Environmental Operating Report (AREOR) documents issued for calendar year (CY) 2012, 2103, and 2014. REMP laboratory inter-comparison 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 independently confirmed detection level sensitivity requirements for selected environmental media analyzed in the on-site environmental counting room.

Site Inspection and Equipment Walk-down: The inspectors observed implementation of selected REMP monitoring and sample collection activities for atmospheric and Thermoluminescent Dosimeters (TLDs) as specified in the current ODCM and applicable procedures. The inspectors observed equipment material condition and operability, including licensee verification of flow rates and total sample volume results for the weekly airborne particulate filter and iodine cartridge change-outs at six atmospheric sampling stations. The inspectors discussed broadleaf vegetation sampling. Use of proportional water sampling equipment was observed and discussed. Calibration and maintenance surveillance records for selected installed environmental air sampling stations were reviewed. Environmental TLD material condition and placement were verified by direct observation at select ODCM locations. The CY 2013 and 2014 Land Use Census, and select CY 2012 and 2013 environmental dosimeter data, were

reviewed and discussed with licensee staff. In addition, actions for missed samples including compensatory measures, sediment sample collection/processing activities, and availability of replacement equipment were discussed with environmental technicians and knowledgeable licensee staff. 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.

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 6.8, Procedures and Programs, 6.8.4.e, Radioactive Effluent Controls Program, 6.8.4.f, Radiological Environmental Monitoring Program, and 6.9, Reporting Requirements; ODCM, Rev. 29; 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. Documents reviewed are listed in the report Attachment.

Meteorological Monitoring Program: The inspectors toured the primary meteorological tower. The inspectors observed the physical condition of the tower and their 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 primary 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 and evaluated meteorological measurement data recovery for CY 2012, 2013, and 2014.

Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR; 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. Documents reviewed are listed in the report Attachment.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program 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 SAP-0999, "Corrective Action Program", Rev. 13. The inspectors discussed the scope of the licensee's internal audit program and reviewed recent assessment results. Documents reviewed are listed in the report Attachment.

The inspectors completed all specified line-items detailed in IP 71124.07 (sample size of 1).

b. Findings

No findings identified.

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

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radwaste processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included storage tanks, transfer piping, resin dewatering and packaging components, and abandoned radwaste processing equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The inspectors reviewed the 2014 Annual Radioactive Effluent Report and radionuclide characterizations from 2013 - 2014 for selected waste streams. For radwaste resin and Dry Active Waste (DAW), the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology were evaluated and discussed with radwaste staff. The inspectors reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radioactive Material Storage: During walk-downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Transportation: The inspectors evaluated shipping records for consistency with licensee procedures and compliance with NRC and Department of Transportation (DOT) regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and container handling methodology. The inspectors observed shipment preparations for a DAW package and evaluated technician performance and knowledge of DOT requirements.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program documents in the areas of shipping and radwaste processing. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with SAP-0999, "Corrective Action Program", Rev. 13. The inspectors reviewed recent assessment results.

Radwaste processing, radioactive material handling, and transportation activities were reviewed against the guidance and requirements contained in the licensee's Process Control Program, UFSAR Chapter 11, 10 CFR Part 20, 10 CFR Part 61, 10 CFR Part 71, the Branch Technical Position on Waste Classification (1983), and NUREG-1608 "Categorizing and Transporting Low Specific Activity Materials and Surface Contaminated Objects". Documents reviewed during the inspection are listed in the report Attachment.

The inspectors completed all specified line-items detailed in IP 71124.08 (sample size of 1).

b. Findings

No findings identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems Cornerstone

a. Inspection Scope

The inspectors verified the accuracy of the licensee's PI submittals listed below for the period July 2014 through June 2015. The inspectors used the performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, Rev. 7, "Regulatory Assessment Performance Indicator Guideline," and licensee procedure SAP-1360, Rev. 2, "NRC and INPO/WANO Performance Indicators," to check the reporting of each data element. The inspectors sampled licensee event reports (LERs), operator logs, plant status reports, CRs, and performance indicator data sheets to verify that the licensee had properly reported the PI data.

- Mitigating System Performance Index (MSPI) - Emergency AC Power System
- MSPI - High Head Safety Injection System
- MSPI - RHR System

b. Findings

No findings were identified.

.2 Occupational Radiation Safety Cornerstone

a. Inspection Scope

The inspectors reviewed PI data collected from April 2014 through June 2015, for the Occupational Exposure Control Effectiveness PI. For the reviewed period, the inspectors assessed CAP records to determine whether High Radiation Area (HRA), Very HRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. The inspectors reviewed electronic dosimeter alarms for cumulative doses and/or dose rates exceeding established set-points. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

.3 Public Radiation Safety Cornerstone

a. Inspection Scope

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from April 2014 through June 2015.

For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by inspection procedure IP 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 either attending daily screening meetings that briefly discussed major CRs, or accessing the licensee's computerized corrective action database and reviewing each CR that was initiated.

b. Findings

No findings were identified.

.2 Annual Sample Review of CR-13-03952

a. Inspection Scope

The inspectors reviewed CR-13-03952, 'A' Chiller tripped on compressor #2 low oil level, in detail to evaluate the effectiveness of the licensee's corrective actions for important safety issues. The inspectors assessed whether the issue was properly identified, documented accurately and completely, properly classified and prioritized, adequately considered extent of condition, generic implications, common cause, and previous occurrences, adequately identified root causes/apparent causes, and identified appropriate and timely corrective actions. The inspectors verified the issues were processed in accordance with procedure, SAP-999, "Corrective Action Program," Rev. 13A.

b. Findings

No findings will be documented for this issue. Under CR-13-03952, the licensee formed a failure modes analysis (FMA) team who studied the plant computer data immediately before and after the chiller trip. The FMA team completed 6 low load test runs for the 'A' chiller, all of which resulted in the 'A' chiller tripping on circuit 2 low oil level. The FMA team concluded that the trips occurred due to: inadequate (low) superheat causing liquid floodback to the compressor and insufficient (low) evaporator heat load to promote proper oil return.

On April 6, 2014, the licensee completed an equipment apparent cause evaluation (EACE) to determine the cause of the chiller trip. The inspectors reviewed the EACE, and concluded that inadequate chiller design logic was one of the apparent causes for the chiller trip. The inspectors also noted that the EACE states the chiller logic was not designed to "prevent operation below the minimum evaporator load" and would not "maintain the superheat requirements for the compressor to preclude liquid floodback" under low loading conditions.

The inspectors further reviewed CR-13-03952 and verified that the trip conditions described were corrected with a software design modifications under engineering change request (ECR) 50585V-5, along with several work orders linked to corrective actions found under CR-13-03952.

On May 19, 2014, the licensee completed an operability evaluation that determined the 'A' chiller has been inoperable since August 5, 2011, when it was initially installed, through July 27, 2013. Subsequently, on June 8, 2015, the licensee submitted license event report (LER) 2015-002-00 because the past inoperability of the 'A' chiller led to the past inoperability of several supported components.

The inspectors noted that several previous condition reports prior to CR-13-03952 also documented previous circuit 2 low oil level trips: CR-11-04585, CR-13-00166 and CR-13-03124. Inspectors determined that since no additional plant computer data was being captured at the time for various chiller control parameters, there was no post trip data to conclusively show the cause of these trips was the design deficiency.

However, the inspectors concluded that these previous circuit 2 low oil level trips presented an opportunity for the licensee to identify the design deficiency earlier, had the evaluations of the problem been more thorough.

The inspectors noted that recent design changes discussed below were examples of the licensee's failure to verify adequate design following replacement 'A' chiller in 2011. However, since discovery for this issue was less than a year after a prior 10 CFR 50, Appendix B, Criterion III NCV was issued (PLANT MODIFICATIONS INSPECTION REPORT 05000395/2013008, NCV 05000395/2013008-01).

4OA3 Event Followup

(Closed) LER 05000395/2015-002-00: Low Oil Level Trip Renders Chiller Non-functional and 'A' Train of Charging System Inoperable

On September 25, 2013, the 'A' train chiller tripped on low oil level following surveillance testing. The licensee completed a past operability review that concluded the chiller had been non-functional during the month of July, 2013, and on April 9, 2015, determined the event was reportable. The problem was entered in the licensee's CAP as CR-13-03952. The inspectors conducted a review of this CR which is documented in Section 4OA2.2 of this report. This LER is closed.

4OA6 Meetings, Including Exit

On October 23, 2015, the resident inspectors presented the integrated inspection report results to Mr. T. Gatlin and other members of the licensee staff. The licensee acknowledged the results of these inspections. The inspectors confirmed that inspection activities discussed in this report did not contain proprietary material.

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 the NRC Enforcement Policy for being dispositioned as a Non-Cited Violation.

Technical Specification (TS) 6.8.4.e, "Radioactive Effluent Controls Program," requires the control and assessment of radioactive effluents be performed per the methodologies in the ODCM. ODCM 1.2.1.1.b requires, when less than the minimum number of channels are operable on the Main Plant Vent-Exhaust System (RMA-0003), releases can continue provided continuous samples with auxiliary equipment are collected. Contrary to this requirement, on October 26, 2012, with RMA-0003 rendered inoperable due to a planned loss of power, releases continued for approximately 7 hours via this pathway without the collection of continuous samples with auxiliary sampling equipment. The license entered the event in the CAP as CR 12-04908. This finding was determined to be Green because it did not involve a substantial failure to implement the radioactive effluent release program or result in an effluent release of radioactive material that exceeded the dose values in Appendix I to 10 CFR Part 50 and/or 10 CFR 20.1301. The licensee's determination that no detectable releases of radioactive material occurred while RMA-0003 was inoperable was reviewed by the inspectors.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Anderson, Medical Coordinator, Nuclear Licensing
A. Barbee, Director, Nuclear Training
T. Bowers, Medical Coordinator, Nuclear Licensing
C. Calvert, Manager, Design Engineering
M. Coleman, Manager, Health Physics and Safety Services
N. Constance, Manager, Nuclear Training
G. Douglass, Manager, Nuclear Protection Services
D. Edwards, Supervisor, Operations
J. Garza, Supervisor, Nuclear Licensing
T. Gatlin, Vice President, Nuclear Operations
L. Harris, Manager, Quality Systems
R. Haselden, General Manager, Organizational / Development Effectiveness
M. Jordan, Supervisor, Environmental
R. Justice, Manager, Nuclear Operations
G. Lippard, General Manager, Nuclear Plant Operations
F. Lucas, Training Supervisor, Operations
R. Mike, Manager, Chemistry Services
M. Moore, Supervisor, Nuclear Licensing
S. Reese, Licensing Specialist
M. Roberts, Supervisor, New Plant, Environmental
D. Shue, Manager, Maintenance Services
W. Stuart, General Manager, Engineering Services
W. Taylor, Nuclear Licensing Engineer
B. Thompson, Manager, Nuclear Licensing
J. Wasieczko, Manager, Organization Development and Performance
D. Weir, Manager, Plant Support Engineering
R. Williamson, Manager, Emergency Services
S. Zarandi, General Manager, Nuclear Support Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed		
05000395/2015003-01	NCV	Failure to Assess and Manage Risk Associated with Emergent Work (Section 13)
Closed		
05000395/2015002-00	LER	Low Oil Level Trip Renders Chiller Non-Functional and 'A' Train of Charging System Inoperable (Sections 4OA2.3 and 4OA3.1)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Complete System Walkdown

Procedures

SOP-117, Server Water System, Rev 23D
SOP-102, Chemical and Volume Control System, Rev 23K
STP-102.017, Alernate Seal Injection Sytem Discharge Valve Test, Rev 0
PTP-102.017, Alernate Seal Injection Pump Functional Test, Rev 1
SP-0988, Construction Specification, Alernate Seal Injection Diesel Generator for ECR-50780C

Drawings

D-302-221, Service Water Cooling, Rev 29
D-302-675,Chemical and Volume Control, Rev 33

Section 1R11: Licensed Operator Requalification (Section 1R11.3)

Records

License Reactivation Packages (3 Records Reviewed).
LORP Training Attendance records (7 Records Reviewed).
Medical Files (7 Records Reviewed).
Remedial Training Records (3 Records Reviewed).
Remedial Training Examinations (1 Record Reviewed).
Feedback Summaries (12 Records Reviewed).

Written Examinations

2015 RO Exam 1-C
2015 SRO Exam 2-D

Procedures

OAP-110.2, Operator Watchstanding Certification and Tracking, Revision 1, Change D.
VCS-TQP-0305, Operation's JPM Development, Revision, and Approval, Revision 1, Change B.
VCS-TQP-0403, Non-Regulatory Examinations and Security, Revision 0, Change C.
VCS-TQP-0405, Regulatory Exam Security, Revision 1.
VCS-TQP-0407, Scheduling and Administration of Licensed Operator Annual Requalification Examinations and Post-Examination Activities, Revision 0.

VCS-TQP-0408, Development, Review, and Validation of Licensed Operator Requalification Annual and Biennial Exams, Revision 0, Change A.
VCS-TQP-0414, Conduct of Simulator Training and Evaluation, Revision 0, Change A.
VCS-TQP-0804, Licensed Operator Requalification Training Program, Revision 0, Change A.

Simulator Steady State Tests
IST-4.4, 25 Percent Power Steady State Accuracy Test, 12/05/2011.

Simulator Normal Evolution Tests
IST-8.2.2, Safety Injection Valve Operability Test, STP-105.003, 10/03/2012.
IST-8.12.1, Diesel Generator Operability Test, STP-124.001, 10/22/2014.

Simulator Transient Tests
IST-7.3, Main Turbine Trip (At Maximum Power Level Which Does Not Cause Reactor Trip, 11/20/2011.
IST-7.8, Simultaneous Trip of All Feedwater Pumps, 11/14/2012.
IST-6.11.7, PRS-7C – Pressurizer Safety Valve C Fail Open, 08/01/2013.
IST-10.7, Reactor Trip After Closure of C Feedwater Isolation Valve, 07/24/2013.

Condition Reports
CR 13-03287, This CR is to capture NRC Inspector concerns with the Licensed Operator Annual Requal Exam Simulator Scenarios during the Aug 2013 71111.11 NRC inspection.
CR 13-03289, This CR is to capture problems with the simulator and/or the instructor's use of the simulator during the Annual Requal Exams during the Aug 2013 71111.11 NRC inspection.
CR 13-05083, Control Room Emergency ventilation was secured when RMA001 was inoperable.
CR 14-00440, Wrong section of SOP-505 used when swapping from A to B train of Control Room ventilation.
CR 14-02555, While Filling SOP-102, Section III A, it was noted by the Control Room that the reactor vessel level was increasing.

Simulator Problem Reports & Design Change Requests
Simulator Reports
SDR 134, Thor Abort in cell 694 – Train A Spray Pump – nodal sheet 65.
SDR 489, Physical Fidelity Differences.
SDR 549, Unexpected Refueling Cavity Level Increase.

Scenario Packages
LOR-SA-006R, 25% Power, BOL, High RCS Activity, SBLOCA, Revision 3, 3/19/2015.
LOR-SA-080R, 100% Power, Loss of Heat Sink, Revision 4, 6/16/2015.
LOR-SA-086R, 100%Power, BOL, ATWS, SGTL, SGTR, Revision 4, 5/9/2011.
LOR-SA-212R, 100% Power, Lockout 1DB, Faulted SG IRC, Reactor Fails to Trip in Auto, Failure of RB Spray, Revision A, 3/20/2015

JPM Packages
JPS-020, Place Excess Letdown in service, Revision 8, 7/27/2015.
JPP-025, Respond to EFW Steam Binding, Revision 6, 6/4/2015.

JPP-029, Reset the P/A Converter During Dropped Rod Recovery IAW AOP-403.6. Revision 1, 8/12/2015.
JPSF-044A, Respond to Inadequate Core Cooling (Depressurize S/G to < 140 psig), Revision 9, 7/27/2015.
JPPF-113, Fill the CST from the Fire Service System, Revision 11, 7/21/2015.
JPS-142, Classify Emergency (U/E – Fuel Clad Deg), Revision 6, 7/27/2015.
JPSF-158, Establish Service Water to Emergency Feedwater, Revision 2, 7/27/2015.
JPP-167A, Establish Demineralized Water Alternate Cooling to Charging Pumps, Revision 10, 6/11/2015.
JPP-052A, Startup the Swing Battery Charger and Place on DPN-1HA, Revision 11, 8/7/2015.
JPPF-520A, Implement FEP-4.0 Through < 42 Minute Actions – High Head SI Not Available, Revision 1, 8/5/2015.

Section 2RS6: Radioactive Gases and Liquid Effluent Treatment

Procedures, Guidance Documents, and Manuals

Annual Radioactive Effluent Release Reports for 2012, 2013 and 2014
Drawing #IMS-28-430, HVAC Transducer Flow, Rev 8
GTP-702, Attachment VI, Release Via Main Plant Vent with RM-A3 Inoperable, Rev 17
HPP-0709 Sampling and Release of Radioactive Gaseous Effluents, Rev. 12
HPP-0710 Sampling and Release of Radioactive Liquid Effluents, Rev. 12
HPP-0904 Use of the Radiation Monitoring System (RMS), Rev. 13
ICP-360.021, Temporary Power to Radiation Monitors During “A” Train Outage, Rev 4
NL-122, “Regulatory Notification and Reporting “, Rev 6
Offsite Dose Calculation Manual, Rev. 29
SAP-0999, Corrective Action Program, Rev. 13, Change A

Records and Data Reviewed

Gaseous Waste Release Permit Number MPV-15-38, 06/26/2015
Gaseous Waste Release Permit Number MPV-15-39, 06/27/2015
Gaseous Waste Release Permit Number CP-15-04, 7/27/2015
HPP-0904 Attachment VII, Record of Actions Required for Inoperable Radiation Monitors for
Liquid Waste Release Permit Number TB-15-25, 06/25/2015
Liquid Waste Release Permit Number WM-15-82, 7/28/2015
Liquid Waste Release Permit Number WM-15-83, 7/28/2015
Results of Radiochemistry Cross Check Program -VC Summer, 2012, 2013 and 1st Qtr 2014
RML-08, 03/27-03/27/2015
SA13-HP-04S, Ground Water Protection Self- Assessment, 08/05/2013
SAP- 205, Attachment 1, Removal and Restoration Checklist, of Out of Service Effluent Radiation Monitors for 2012, 2013, 2014 and 2015 to date
TR02510-001, Groundwater Protection Initiative Report, VC Summer Nuclear Station, Rev 0
Virgil C. Summer, Radiation Monitor System Health Reports, 2013 and 2014
WO Step: 1214176-001, AB Exhaust HEPA & HECA Test, 06/28/2013
WO Step: 1408812-001, AB Exhaust HEPA & HECA Test, 10/06/2014
10 CFR 50.75(g) List of Events 09/01/2012 -07/13/2015

Corrective Action Program (CAP) Documents

CR-12-03733	CR-12-04908	CR-13-02816
CR-13-02862	CR-13-02884	CR-13-03157

CR-13-03226 CR-13-04769 CR-14-00529
CR-14-00943

Section 2RS7: Radiological Environmental Monitoring Program (REMP)

Procedures and Guidance Documents

HPP-0834, Setup, Calibration, Quality Control and Operation of Gamma Spectroscopy Systems with ORTEC Software, Rev. 0, Change A
HPP-1000, Conduct of Environmental, Rev. 7, Change C
HPP-1011, Annual Census, Rev. 4
HPP-1020, Environmental Sample Collection, Rev. 0
HPP-1024, Groundwater Monitoring Well Sampling, Rev. 6, Change A
HPP-1033, Environmental Tritium Counting and Activity Determination, Rev. 4
HPP-1051, Environmental Sampler Calibration and Maintenance, Rev. 5, Change A
HPP-1052, Setup, Operation and Maintenance of the ISCO 3700 and 3710 Portable Water Sampler, Rev. 3
HPP-1060, Meteorological Data Checks, Verification and Correction, Rev. 5, Change B
ICP-300.017, Meteorological Site Miscellaneous Instrumentation Calibration, Rev. 0, Change A
Offsite Dose Calculation Manual Revision 29, 8/27/13
SAP-0999, Corrective Action Program, Rev. 13A
VCS-HPP-1030, Environmental Alpha/Beta Counting and Activity Determination, Rev. 0

Records and Data Reviewed

Background and QA/QC Records for Environmental Lab Tennelec LB5100Alpha/Beta counting System, 9/23/14 through 7/13/15
Fixed Environmental Air Sampler Calibration Records (HPP-1051, Attachment 1) for the following: Site 2, Gas meter # D519466, 7/16/14; Site 6, Gas meter # G141305, 12/10/14 and 6/10/15; Site 7, Gas meter # D587098, 10/3/14; Site 8, Gas meter # D744998, 11/ 25/14 and 5/27/15; Site 17, Gas meter # G141304, 10/22/14; Site 30, Gas meter # D519472, 7/16/14
Gamma Spectroscopy System Background and QA/QC Records for Environmental Lab Detector #11, 1/16/15 through 7/30/15
Gamma Spectroscopy System Background and QA/QC Records for Environmental Lab Detector #13, 1/16/15 through 7/30/15
Memo to File (RAS File #125), 2013 Annual Land Use Census, 3/20/14
Memo to File (RAS File #125), 2014 Annual Land Use Census, 3/18/15
Mirion Environmental Dosimeter Results for the period of 10/16/12 through 1/10/13
Progress Energy Carolinas, Inc. Environmental TLD Analysis Report for VC Summer Station for the period of 10/16/12 through 1/10/13
Results of Environmental Cross-Check Program: Third Quarter 2012, 12/12/13; First Quarter 2013, 5/10/13; Third Quarter 2013, 10/29/13; First Quarter 2014, 5/16/14; Third Quarter 2014, 11/18/14
South Carolina Department of Health and Environmental Control Split Sample Analysis Results for the following VC Summer Environmental Samples: Fish (Bass) from Monticello Reservoir, 4/9/13; Vegetation, 5/13/13
Spreadsheet - Groundwater Sample Results for the period January 2012 through June 2015, 7/13/15
Spreadsheet - 2013 Quarterly Environmental TLD Dose Comparison, No Date
Spreadsheet – 1st Quarter 2014 VC Summer Station Environmental TLD Dose Comparison, No Date

Split Sample Results with GEL Laboratories for the following VC Summer Environmental Samples: Fish (Bass) Sample Code H23-1715, 4/22/15; Discharge Canal Sediment Sample code S23-1715, 4/27/15
Work Order 1407516-001, Met. Site Inst. Channel A Calibration (STP0393.005A), 9/12/14
Work Order 1407517-001, Met. Site Inst. Channel B Calibration (STP0393.005B), 9/17/14
Work Order 1416849-001, Met. Site Inst. Channel A Calibration (STP0393.005A), 2/12/15
Work Order 1417074-001, Met. Site Inst. Channel B Calibration (STP0393.005B), 2/13/15
10 CFR 61 Analysis of DAW 2014, 8/19/14
2012, 2013, and 2014 Virgil C. Summer Nuclear Station Radiological Environmental Operating Reports
50.75(g) Records, K5c1, Tritium Groundwater Monitoring (CR-13-03157 and CR-13-03226), K5c2, 50.75g (CR-13-04769)

CAP Documents

CR-13-00204	CR-12-04850	CR-13-01775	CR-13-02193
CR-13-03157	CR-13-03837	CR-13-04769	CR-14-02624
CR-14-02643			

Quality Assurance Audit, QA-AUD-2014-13, Environmental Monitoring, 9/25/14
Self-Assessment Report, SA-13-HP-03A, Health Physics Environmental Program, 10/22/13

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

Procedures and Guidance Documents
HPP-0717, Sample Collection, Preparation, and Analysis Techniques for Assuring Compliance with 10 CFR 61, Rev. 8
HPP-0736, Resin Dewatering for Burial, Rev. 0
PCP-001, Process Control Program for Solid Radioactive Waste, Rev. 12
SAP-0999, Corrective Action Program, Rev. 13, Change A
VCS-HPP-0410, Health Physics Routine Surveys, Rev. 0
VCS-HPP-0703, Shipping Radioactive Material, Rev. 1
VCS-HPP-0716.003, Cask Handling Procedure for US DOT Specification 7A, Type A Transportation Cask, Rev. 0

Shipping Records and Radwaste Data
ALARON Corporation Vehicle Radiation/Contamination Survey Map, Shipment 15-0457, 7/22/15
MHF Services, Cargo Container Operating Instructions
RC-13-0140, 71.95 Report on the 8-120B Cask
Shipping Logs, 1/1/12 – 7/7/15
Shipment 12-075, SCO, Refueling Equipment
Shipment 13-038, Type A, Spent Fuel Pool Equipment
Shipment 14-060, LQ, Leak Test Swabs
Shipment 14-065, LSA, Radwaste Resin
Shipment 15-003, LSA, Dry Active Waste
Shipment 15-023, LSA, Primary Resin
Shipment 15-027, SCO, RCP Motor Stator
2013 Duratek Mixed Bed 10 CFR 61 Analysis

2014 Annual Radioactive Effluent Release Report
2014 DAW 10 CFR 61Analysis

CAP Documents

CR 13-00901	CR 13-02661	CR 14-00939	CR 14-02205
CR 15-00814	CR 15-03352		

QA-AUD-2015-01, Radioactive Waste Audit

Section 4OA1: Performance Indicator Verification

Records and Data Reviewed

Electronic Dosimeter Dose and Dose Rate Alarm Summary Reports for the period 1/1/2014 through 7/1/2015
Liquid Waste Release Permit Number WM-15-82, 7/28/2015
Gaseous Waste Release Permit Number CP-15-04, 7/27/2015
HPP-0242, Enclosure A, for the period April, 2014 through June, 2015
SAP-1360, NRC and INPO/WANO Performance Indicators, Rev. 2
SAP-1360, Attachment VIII and Attachment XXXX, for the period April, 2014 through June, 2015
2014 Annual Radioactive Effluent Release Report
CR-15-00120
CR-15-03375
CR-14-03961

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agency Document Access and Management System
ARERR	Annual Radiological Effluent Release Report
AREOR	Annual Radiological Environmental Operating Report
CAP	Corrective Action Program
CB	Control Building
CFR	Code of Federal Regulations
CR	Condition Report
CY	Calendar Year
DOT	Department of Transportation
EACE	Equipment Apparent Cause Evaluation
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EQ	Equipment Qualification
ES	Engineering Services Procedure
EST	Eastern Standard Time
FMA	Failure Modes Analysis
FPP	Fire Protection Program
FSAR	Final Safety Analysis Report
GTP	General Test Procedure
HVAC	Heating, Ventilation and Air Conditioning
IB	Intermediate Building
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
MR	Maintenance Rule
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NPF	Nuclear Power Facility
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulatory
OAP	Operations Administrative Procedure
ODCM	Offsite Dose Calculation Manual
OOS	Out of Service
PARS	Publicly Available Records System
PD	Performance Deficiency
PI	Performance Indicator
PMT	Post-Maintenance Testing
PSIG	Pounds Per Square Inch Gauge
RB	Reactor Building
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
REV.	Revision
RG	Regulatory Guide
RHR	Residual Heat Removal

SOP	System Operating Procedure
SP	Spray
SPB	Steam Propagation Barrier
SSC	Structure, System, and Components
SSPS	Solid State Protection System
STP	Surveillance Test Procedure
SW	Service Water
TS	Technical Specification
TWR	Technical Work Request
U1	Unit 1
UFSAR	Updated Final Safety Analysis Report
WANO	World Association of Nuclear Operators
WO	Work Order