



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

May 6, 2013

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 - NRC INTEGRATED INSPECTION  
REPORT 05000395/2013002**

Dear Mr. Gatlin:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station. The enclosed inspection report documents the inspection results, which were discussed on April 17, 2013, with you and other members of your staff.

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

One NRC-identified finding of very low safety significance (Green) was identified during the inspection. This finding was determined to involve a violation of NRC requirements. Additionally, licensee-identified violations which were determined to be of very low safety significance are listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States 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 Virgil C. Summer Nuclear Station.

Additionally, if you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station.

T. Gatlin

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and management System (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

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

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

Enclosure: NRC Integrated Inspection Report 05000395/2013002  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

T. Gatlin

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Gerald J. McCoy, Chief  
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Letter to Thomas D. Gatlin from Gerald J. McCoy dated May 6, 2013.

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION  
REPORT 05000395/2013002

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No. 50-395

License No. NPF-12

Report No. 05000395/2013002

Licensee: South Carolina Electric & Gas (SCE&G) Company

Facility: Virgil C. Summer Nuclear Station

Location: P.O. Box 88  
Jenkinsville, SC 29065

Dates: January 1, 2013 through March 31, 2013

Inspectors: J. Reece, Senior Resident Inspector  
E. Coffman, Resident Inspector  
C. Fletcher, Senior Reactor Inspector (Section 4OA5.1)  
R. Williams, Senior Reactor Inspector (Section 4OA3)  
M. Coursey, Reactor Inspector (Section 4OA5.4)

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000395/2013002; 1/01/2013 - 3/31/2013: Virgil C. Summer Nuclear Station; Other Activities

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

### A. NRC-Identified and Self-Revealing Findings

Cornerstone: Barrier Integrity

Green. The inspectors identified a non-cited violation (NCV) of Code of Federal Regulation (CFR) 10 CFR Part 50.55a, "Codes and Standards," involving the licensee's failure to include the reactor pressure vessel supports in the scope of the V. C. Summer Inservice Inspection Program (ISI) program. 10 CFR 50.55a requires that licensees develop an Inservice Inspection (ISI) program and update that program every 10 years in accordance with the approved edition of American Society of Mechanical Engineers (ASME) Section XI in effect 12 months prior to the beginning of the 10 year interval. The inspectors identified that the nuclear Class 1 reactor pressure vessel supports were not included in the scope of the V. C. Summer Unit 1 ISI Program for the third interval. The licensee's ISI program was prepared in accordance with the 1998 Edition of the ASME Section XI Code, with addenda through 2000, as modified by 10 CFR 50.55a. As required by Article IWF 1000, Table 2500-1, Examination Category Item Number F1.40, the Reactor Pressure Vessel (RPV) supports are required to be periodically VT-3 visually examined. Also as required by Subsection IWB of Section XI, Table IWB-2500-1, Examination Category B-K, Item No. B10.10, the support integral attachment weld is to be periodically subjected to a surface examination. This issue was entered into the licensee's corrective action program as Condition Report (CR) 13-00138 and CR-13-00737. The licensee took action and performed an operability determination and conducted remote visual examinations to assess the condition of the reactor vessel supports.

The failure to include the RPV supports in the scope of the ISI program and the failure to conduct the required examinations was a performance deficiency that was within the ability of the licensee to foresee and correct. This finding was of more than minor significance because it was associated with the Design Control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, examinations of the RPV supports provide assurance that the structural boundary of the reactor coolant system remains capable of performing its intended safety function. The inspectors used IMC 0609, "Significance

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Determination Process,” Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” and determined that the finding was of low safety significance (Green) because it did not represent an actual failure of the RPV supports.

The cause of the finding involved the cross-cutting area of problem identification and resolution, the component of operating experience (OE), and the aspect of implements and institutionalizes OE through changes to station process, procedures and programs, P.2(b). Specifically, the licensee failed to implement and institutionalize OE for RPV supports into station processes and procedures. (Section 40A5.4)

B. Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. The violations and the respective corrective action tracking numbers are listed in Section 40A7 of this report.



## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at full rated thermal power (RTP) and continued until March 23, 2013, when the unit shutdown for a planned outage to replace the 'C' reactor coolant pump (RCP) seal package. The unit remained shutdown for the rest of the quarter.

#### 1. REACTOR SAFETY

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### 1R01 Adverse Weather Protection

##### Impending Adverse Weather Conditions

##### a. Inspection Scope

On January 30, 2013, a tornado watch was issued for Fairfield County and the inspectors performed a reactive weather related inspection. The inspectors reviewed licensee adverse weather response in operations administrative procedure, (OAP)109.1, "Guidelines for Severe Weather," Revision (Rev.) 3, and related site preparations including work activities that could impact the overall maintenance risk assessments.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment

##### Partial System Walkdowns

##### a. Inspection Scope

The inspectors conducted five 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 (WO) and related condition reports (CR) 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.

- 'B' motor driven emergency feedwater (MDEFW) pump and turbine driven emergency feedwater (TDEFW) pump during planned maintenance on 'A' MDEFW pump
- 'B' emergency diesel generator (EDG) during planned maintenance on 'A' EDG
- 'A' EDG during planned maintenance of 'B' EDG

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- 'A' and 'B' EDGs and switch gear rooms 1DX, 1DA and 1DB, while 115 kV Parr line was out of service affecting one train of offsite power
- 'B' reactor building (RB) spray components during planned maintenance on 'A' RB spray pump motor and related components

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. The inspectors conducted routine inspections of the following five areas (respective fire zones also noted):

- Intermediate building 'A' and 'B' battery/charger rooms (fire zones IB-1, 2, 3, 4, 6)
- Intermediate building TDEFW pump room (fire zone IB-25.2)
- Service water (SW) pumphouse (fire zones SWPH-1, 3, 4, 5.1 and 5.2)
- Control building 482' elevation (fire zones CB-22 and CB-23)
- Auxiliary building 374' elevation (fire zones AB-1.1, 1.2, 1.3)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

Internal Flooding

a. Inspection Scope

The inspectors reviewed and walked down the auxiliary building AB-374' elevation regarding internal flood protection features and equipment to determine consistency with design requirements, final safety analysis report (FSAR), and flood analysis documents. Risk significant structures, systems, and components (SSCs) in these areas included the residual heat removal (RHR), and reactor building spray pumps. The inspectors reviewed the licensee's corrective action program (CAP) database to verify that internal flood protection problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved. Documents reviewed are listed in the attachment.

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b. Findings

No findings were identified.

1R07 Heat Sink Performance

Annual Review

a. Inspection Scope

The inspectors conducted one heat sink performance sample. The inspectors reviewed a visual inspection report for the 'A' EDG lube oil heat exchanger, jacket water heat exchanger and intercooler heat exchanger. The inspectors reviewed the applicable health reports, and verified that the heat exchanger performance issues were entered into the licensee's CAP.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance

.1 Resident Quarterly Review of Operator Regualification

a. Inspection Scope

The inspectors observed an operator regualification simulator exam occurring on March 4, 2013. The scenario involved the following failures: a power range channel, a dropped rod, a rod ejection loss of coolant accident, a charging pump, and auto-start of a charging pump. 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 when required, emergency action levels as the Site Emergency Director. 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 observations of licensed reactor operator activities to ensure consistency with licensee procedures and regulatory requirements. For the listed 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.

- Observation of manual volume control tank level make-up, RCP under frequency trip testing and 'B' boron thermal regeneration system (BTRS) start
- Observation of BTRS troubleshooting and response to 'C' RCP number 2 seal abnormal performance

### b. Findings

No findings were identified.

## 1R12 Maintenance Effectiveness

### a. Inspection Scope

The inspectors evaluated two equipment issues described in the CRs listed below to verify the licensee's effectiveness with the corresponding preventive or corrective maintenance associated with 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 also 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. 5, "Maintenance Rule Program Implementation," and station administrative procedure (SAP)-0157, Rev. 0, Change A, "Maintenance Rule Program," to verify consistency with the MR program requirements.

- CR-12-03599, 'A' EDG exciter failed to start
- CR-13-00166, 'A' chiller shutdown due to hot gas bypass valve problem

b. Findings

The enforcement aspects associated with CR-12-03599 are discussed in section 4OA7 of this report.

1R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the five selected work activities listed below: (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 1, risk assessment for 'B' SW pump and 'B' SW booster pump resulting in yellow plant risk
- Work Week 6, risk assessments for 'A' EDG planned maintenance outage
- Work Week 8, risk assessments for 'B' EDG planned maintenance resulting in yellow plant risk
- Work Week 10, risk assessments for 115 kV Parr line being out of service resulting in yellow plant risk
- RCP seal repair planned outage safety review

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed 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 also verified that the operability evaluations were performed in accordance with SAP-209, Rev. 1, "Operability Determination Process," and SAP-999, Rev. 10, "Corrective Action Program."

- CR-12-03599, 'A' EDG exciter failed to start
- CR-13-00459, post maintenance test not performed for XVR03026-SP
- CR-13-01063, 'A' RB spray pump motor oil drain cracks
- CR-12-05877, seismic qualification problems with safety-related direct current (DC) breakers

b. Findings

The enforcement aspects associated with CR-12-03599 are discussed in section 4OA7 of this report.

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, Rev. 5, Change B, "Post Maintenance Testing Guideline."

- WO 1206645-001, remove / re-install upper and lower bearing cooling water spool pieces for the 'B' SW motor
- WO 1106889-001, replace re-latch lever spring for TDEFW main steam throttle valve
- WO 1210122, inspect and clean 'A' EDG lube oil, jacket water and intercooler heat exchangers
- WO 1101441, replace cylinder liner o-rings for 'A' EDG's numbers 8 and 12 cylinders
- WO 1207340-001, replace safety-related air supply pressure regulator for control room outside air intake valve
- WO 1212574-003, re-perform flow testing for the 'B' SW booster pump following flushing of instrument lines after a failed surveillance

b. Findings

No findings were identified.

## 1R20 Refueling and Other Outage Activities

### Planned Outage

#### a. Inspection Scope

The inspectors performed the the inspection activities described below for a planned outage to effect seal repairs on 'C' RCP. The outage began on March 23, 2013, and continued through the end of the quarter. The inspectors used inspection procedure 71111.20, "Refueling and Outage Activities," to complete the inspections described below.

Prior to and during the outage, the inspectors reviewed the licensee's outage risk assessments and controls for the outage schedule to verify that the licensee had appropriately considered risk, industry experience and previous site specific problems, and to confirm that the licensee had mitigation/response strategies for losses of any key safety functions.

In the area of licensee control of outage activities, the inspectors reviewed equipment removed from service to verify that defense-in-depth was maintained in accordance with applicable TS and that configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage schedule and risk control plan.

The inspectors reviewed selected components which were removed from service to verify that tag outs were properly installed and that associated equipment was appropriately configured to support the function of the clearance.

During the outage, the inspectors reviewed and/or observed the following:

- RCS pressure, level, and temperature instruments to verify that those instruments provided accurate indication
- The status and configuration of electrical systems to verify that those systems met TS requirements and the licensee's outage risk control plan. The inspectors also evaluated if switchyard activities were controlled commensurate with their risk significance and if they were consistent with the licensee's outage risk control assessment assumptions
- The control of containment penetrations and containment entries to verify that the licensee controlled those penetrations and activities in accordance with the appropriate TS and could achieve/maintain containment closure for required conditions
- All accessible areas in which work was performed inside the reactor building prior to reactor startup to verify that debris had not been left which could affect the performance of the containment emergency core cooling system recirculation sumps

The inspectors reviewed the following activities for conformance to applicable TS and licensee procedural requirements:

- Plant shutdown activities
- Decay heat removal system operations
- Inventory controls and measures to provide alternate means for inventory addition
- Electrical power availability controls
- Reactivity controls

The inspectors reviewed various problems that arose during the outage to verify that the licensee was identifying problems related to outage activities at an appropriate threshold and was entering them in the CAP.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed the six 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-223.002, "Service Water Pump Test," Rev. 9G
- STP-222.002, "Component Cooling Pump Test," Rev. 9E

Reactor Coolant System

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

Other:

- STP-501.001A, "Battery XBA1A Weekly Test," Rev. 2
- STP-506.003, "RCP Under-Frequency Unit Trip Actuating Device Operational Test," Rev. 10C
- STP-106.001, "Moveable Rod Insertion Test," Rev. 6A

b. Findings

No findings were identified.

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### **Cornerstone: Emergency Preparedness**

#### 1EP6 Drill Evaluation

##### Emergency Preparedness (EP) drill

##### a. Inspection Scope

On February 20, 2013, the inspectors reviewed and observed the performance of an EP drill that involved a steam generator tube rupture, miscellaneous control rods failure to trip, an EDG failure following auto-start, failed fuel, a containment isolation valve failure, and a feedwater pipe break which required entry into increasing emergency action levels starting with an Alert and ending in a General Emergency. The drill additionally included a turnover between two different EP staffs. 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.

#### 4. OTHER ACTIVITIES

#### 4OA1 Performance Indicator (PI) Verification

### **Cornerstone: Initiating Events**

##### a. Inspection Scope

The inspectors verified the accuracy of the licensee's PI submittals listed below for the period January 1, 2012 through December 31, 2012. The inspectors used the performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, Rev. 6, "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, tagout records, plant risk records, plant status reports, CRs, and performance indicator data sheets to verify that the licensee had properly reported the PI data. Also, the inspectors discussed the PI data with the licensee personnel associated with the performance indicator data collection and evaluation.

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Power Changes per 7000 Critical Hours
- Unplanned Scrams with Complications

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by 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 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 'A' EDG Exciter

a. Inspection Scope

The inspectors reviewed CR-12-03599, 'A' EDG exciter failed to properly reset during testing following shutdown of the diesel, dated August 24, 2012 and CR-12-03998, 'A' EDG exciter failed to properly reset during testing following shutdown of the diesel, dated September 19, 2012, 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. Also, the inspectors verified the issues were processed in accordance with procedure, SAP-999, "Corrective Action Program," Revision 10.

b. Findings

On August 24, 2012, during testing of the 'A' EDG under STP-125.002A, "Diesel Generator 'A' Operability Test," Revision 2B, the exciter did not properly reset at the end of the 1 hour full-load run; preventing the 'A' EDG exciter circuit from starting for the next portion of the test. Subsequently, CR-12-03599 was initiated; the licensee formed a failure mode analysis (FMA) team; and a list of potential failure modes was established. The FMA team found no apparently faulty components, but determined that the issue could be caused by one of three relays intermittently failing: K1 relay, ESA relay and the K5 relay. The K5 relay was replaced, while the other two relays were not.

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On August 26, 2012, the licensee completed an operability evaluation. Subsequently, the 'A' EDG was successfully retested and returned to service.

The inspectors reviewed the operability evaluation and determined that a "Not Ready for Autostart" alarm would be lit in the control room whenever the intermittent condition existed following a shutdown, and that the condition would only potentially exist following a shutdown where the exciter's circuit did not properly reset. Additionally, the inspectors noted that once the "Ready for Autostart" condition was established for the 'A' EDG, the 'A' EDG would be able to perform its safety function.

On September 19, 2012, during testing of the 'A' EDG under STP-125.002A, the exciter again did not properly reset at the end of the 1 hour full-load run; preventing the 'A' EDG exciter circuit from starting for the next portion of the test, and CR-12-03998 was initiated. The K1 and ESA relays were replaced at this time. An apparent cause evaluation (ACE) was revised under CR-12-03599 to evaluate both failures. In addition, CR-12-03998 determined that the second failure was a significant condition adverse to quality and a root cause evaluation (RCE) was performed to determine why the issue was not corrected following the first failure.

The inspectors reviewed both the ACE and the RCE in detail. The inspectors verified that the apparent cause of the 'A' EDG exciter circuit failure was due to failure of the K1 relay. During inspection of the relay, the inspectors noted that there was a dark spot on a contact in series with the mechanical latching coil. Further, both the ACE and RCE listed extensive operating experience that dealt with similar intermittent failures of the K1 relay. The inspectors also reviewed the extent of condition section of the ACE and determined that the 'B' EDG has the same exciter circuit. The licensee has since replaced the K1 relay on both EDGs with a type having an improved design, eliminating the suspect contact originally in series with the mechanical latch coil.

The inspectors noted that the root cause from the RCE involved taking actions based on decisions made without adequate consideration of the corrective action program (CAP) expectations and without a full understanding of the potential risk impacts; due to not using all available tools and a failure to use a formal decision making process. The enforcement aspects of a licensee identified violation are discussed in Section 4OA7 of this report.

#### 4OA3 Event Follow-up

##### (Closed) Licensee Event Report (LER) 05000395/2012-003: Reactor Vessel Head Penetrations Not Meeting Requirements of 10 CFR 50.55a(g)(6)(ii)(D)

On October 23, 2012, V. C. Summer Station Unit 1 identified the first of four reactor vessel head penetrations that did not meet the requirements of 10 CFR 50.55a(g)(6)(ii)(D) and American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Code Case N-729-1. At the time of discovery, the station was in a refueling outage (RF20) and performing volumetric testing on the reactor vessel head penetrations. Volumetric and visual inspections determined that the flaws discovered in the four penetrations were not through-wall and that they existed within the

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tube material located inside the pressure boundary and extended up to the toe of the j-groove weld. The apparent cause of the flaws was attributed to primary water stress corrosion cracking. The licensee, in accordance with 10 CFR 50.55a(a)(3)(i), requested and received relief from the ASME Code, Section XI, Paragraph IWA-4420, "Defect Removal Requirements," that requires that defects be removed or mitigated, by submitting a proposed repair method alternative on the basis that the proposed alternative provided an acceptable level of quality and safety. The licensee took actions to restore compliance by performing corrective actions including repairing the penetrations and revising the Bare Metal Visual Examination and Volumetric Examination inspection frequency to every outage. The flaws were repaired using the embedded flaw repair process in accordance with the NRC-approved WCAP 15987, Revision 2-P-A. The inspectors reviewed the event and licensee corrective actions taken and no findings or violations were identified. This LER is closed.

#### 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 licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

###### b. Findings

No findings were identified.

##### .2 (Discussed) Temporary Instruction (TI) 2515/182 - Review of the Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase 1

###### a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, Nuclear Energy Institute (NEI) 09-14, "Guideline for the Management of Buried Piping Integrity," (ADAMS Accession No. ML1030901420), to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Rev. 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI-2515/182

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“Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks,” to gather information related to the industry’s implementation of this initiative. The inspectors reviewed the licensee’s programs for buried pipe and underground piping and tanks in accordance with TI-2515/182 to determine if the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14, Rev. 1, were contained in the licensee’s program and implementing procedures. For the buried pipe and underground piping program attributes, with completion dates that had passed, the inspectors reviewed records to determine if the attribute was in fact complete and to determine if the attribute was accomplished in a manner which reflected good or poor practices in program management. Documents reviewed are listed in the attachment.

b. Observations

The licensee’s buried piping and underground piping and tanks program was inspected in accordance with paragraphs 03.01.a through 03.01.c of the TI and was found to deviate from the requirements of NEI 09-14, Rev. 1, as set forth in Table 1 of the TI, in the following manner: NEI 09-14, Rev. 1, Section 3.3.A.3, states in part, by June 30, 2011, develop a buried piping inspection plan that identifies piping segments to be inspected. Contrary to the requirement listed above, VCSNS had only developed an inspection plan that prioritizes the order of the applicable systems to be inspected vice the detailed inspection plan including piping segments as required by Section 3.3.A.3 of NEI 09-14, Rev. 1.

The deviation detailed above, represents a performance deficiency (PD) in that, the licensee failed to meet a self-imposed standard where the cause was reasonably within the licensee’s ability to foresee and correct. The issue is minor because no adverse impacts to plant safety-related systems were identified. Based upon the scope of the review described above, Phase I of TI-2515/182 was completed.

b. Findings

No findings were identified.

.3 (Closed) Temporary Instruction 2515/187 – Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

The inspector verified that licensee’s walkdown packages as documented in engineering services technical report (TR) 02060-002, “Verification Walkdown Report for VCSNS Plant Flood Protection Features - Walkdown Record Forms and Supplementary Data,” contained the elements as specified in the NEI 12-07 Walkdown Guidance document. The senior resident inspector accompanied the licensee on their walkdown of the EDG building interior walls and verified that the licensee confirmed the following flood protection features:

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- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.
- Reasonable simulation, if applicable to the site.
- Critical SSC dimensions were measured.
- Available physical margin, where applicable, was determined.
- Flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspector independently performed a walkdown of the auxiliary building interior walls of elevation 374' and verified that the flood protection feature of the corresponding exterior wall were in place by:

- Absence of evidence of flood infiltration, leakage, and cracks
- Verification that visible penetrations are sealed

The inspector verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation. Documents reviewed are listed in the attachment.

b. Findings

The enforcement aspects of a licensee identified finding are discussed in section 4OA7 of this report.

.4 (Closed) URI 05000395/2012005-03, Reactor Vessel Supports Not Included in the Licensee's ASME Section XI ISI Program

a. Inspection Scope

NRC integrated inspection report 05000395/2012005 documented Unresolved Item (URI) 05000395/2012005-03 that identified a potential performance deficiency involving the Reactor Vessel Supports and their associated integral welded attachments. The inspectors identified from an In-Service Inspection Activities inspection from October 22 – 26, 2012 that the scope of the V. C. Summer Unit 1 ISI program may not meet the requirements of the Code of Federal Regulations, 10 CFR 50.55a. The 10 CFR 50.55a code requires that in-service inspections be conducted in accordance with the requirements of ASME Code, Section XI, "Rules for In-service Inspection of Nuclear Power Plant Components." The V. C. Summer plant is currently in the third inspection interval and is required to meet the requirements of the 1998 Edition of the ASME Section XI Code, with Addenda through 2000, as modified by 10 CFR 50.55a. The inspectors identified that the nuclear Class 1 reactor pressure vessel supports were not included in the scope of the V. C. Summer Unit 1 ISI Program for the third inspection interval.

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In accordance with the requirements of Section XI, Subsection IWB, the attachment weld associated with the Reactor Pressure Vessel (RPV) supports is required to be subjected to a surface examination, and in accordance with Subsection IWF, the RPV supports are required to be VT-3 visually examined.

This issue was unresolved because the licensee asserted that the integrally welded attachment of the nozzle that rests upon the support is excluded from examination per ASME Section XI, Table IWB-2500-1, Examination Category B-K, Welded Attachments for Vessels, Piping, Pumps, and Valves, Note 1, which states, "Weld buildup on nozzles that is in compression under normal conditions and provides only component support is excluded from examination." Upon further review and discussion with the licensee staff it was determined that this exclusion applied to the integrally welded attachment because it met the definition of being in compression under normal conditions and providing only component support.

Additionally, the licensee asserted that the reactor vessel supports are exempt from examination in accordance with ASME Section XI, Subsection IWF-1230, which states, "Supports exempt from the examination requirements of IWF-2000 are those connected to piping and other items exempted from volumetric, surface, or VT-1 or VT-3 visual examination by IWB-1220, IWC-1220, IWD-1220, and IWE-1220. In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF-2000." The licensee has cited inaccessibility as their reason for exempting the supports from examination due to being encased in concrete.

Upon further review, the inspectors determined that these supports were accessible by remote visual examination and that the exemption of IWF-1230 stated above did not apply for the licensee.

This inspection closes this URI and identifies a finding which is presented below.

b. Findings

Introduction

The inspectors identified a Green non-cited violation (NCV) of Code of Federal Regulation (CFR) 10 CFR Part 50.55a, "Codes and Standards," involving the licensee's failure to include the reactor pressure vessel supports in the scope of the V. C. Summer Inservice Inspection Program (ISI) program. 10 CFR 50.55a requires that licensees develop an Inservice Inspection (ISI) program and update that program every 10 years in accordance with the approved edition of American Society of Mechanical Engineers (ASME) Section XI in effect 12 months prior to the beginning of the 10 year interval. The inspectors identified that the nuclear Class 1 reactor pressure vessel supports were not included in the scope of the V. C. Summer Unit 1 ISI Program for the third interval.

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Description: The inspectors identified that the scope of the V. C. Summer Unit 1 ISI program did not meet the requirements of the Code of Federal Regulations, 10 CFR 50.55a. The 10 CFR 50.55a code requires that in-service inspections be conducted in accordance with the requirements of ASME Code, Section XI, "Rules for In-service Inspection of Nuclear Power Plant Components." The V. C. Summer plant is currently in the third inspection interval and is required to meet the requirements of the 1998 Edition of the ASME Section XI Code, with Addenda through 2000, as modified by 10 CFR 50.55a. The inspectors identified that the nuclear Class 1 reactor pressure vessel supports were not included in the scope of the V. C. Summer Unit 1 ISI Program for the third inspection interval.

In accordance with ASME Section XI Subsection IWF, Table IWF 2500-1, Examination Category F-A, Item No. F1.40, the RPV supports are required to be VT-3 visually examined once each inspection interval.

The V. C. Summer RPV is supported by six supports that are made up of a buildup of welded metal attached to the reactor coolant system (RCS) piping nozzle. The function of the reactor vessel support assembly is to provide support to the reactor vessel and attached piping and to allow for thermal movement of the piping during normal and accident conditions, thereby ensuring the reactor pressure boundary and reactor coolant system boundary can perform their intended safety function of providing the 2<sup>nd</sup> barrier to fission product release. The ISI program required by 10 CFR 50.55a, and the periodic examinations required by Section XI, Subsections IWB and IWF, identified above, provides reasonable assurance that these supports can continue to perform their portion of the intended safety function.

In response to this performance deficiency the licensee initiated condition report CR 13-00138. As part of their corrective action, the licensee initiated actions to conduct a remote VT-3 visual examination of the supports and found no degradation of the Subsection IWF support mechanisms.

#### Analysis

The failure to conduct examinations of the RPV supports in accordance with ASME Section XI, Subsection IWF, Table 2500-1 Examination Category F-A, Item No. F1.40, was a performance deficiency that was within the licensee's ability to foresee and correct.

This finding was of more than minor significance because it was associated with the Design Control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, examinations of the RPV supports provide assurance that the structural boundary of the RCS remains capable of performing its intended safety function.

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The inspectors used IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding was of low safety significance (Green) because it did not represent an actual failure of the RPV supports.

The inspectors reviewed this performance deficiency for cross-cutting aspects as required by IMC 0310, "Components With Cross-Cutting Aspects." The cause of the finding involved the cross-cutting area of problem identification and resolution, the component of operating experience (OE), and the aspect of implements and institutionalizes OE through changes to station process, procedures and programs, P.2(b). Specifically, the licensee failed to implement and institutionalize OE to station processes and procedures. In CR-12-01113 and CR-12-02803 the licensee acknowledged and then screened "OE34106 - Reactor Vessel Supports were not included in the In-service Inspection Program (Cook Nuclear Plant)" on 08/18/2011. The disposition noted that Reactor Vessel supports were included in V. C. Summer's ISI program. However, subsequent follow-up with licensee personnel could not verify that the supports were addressed in the ISI program, thus documenting the failure to implement and institutionalize OE for RPV supports into station processes and procedures. Upon further review it was determined the licensee had not included the Reactor Vessel supports within their ISI program because the supports were deemed to be exempt by IWF-1230 because they were deemed encased in concrete.

#### Enforcement

10 CFR 50.55a requires that licensees develop an ISI program and update that program every 10 years in accordance with the approved edition of ASME Section XI in effect 12 months prior to the beginning of the 10 year interval. The licensee's ISI program was prepared in accordance with the 1998 Edition of the ASME Section XI Code, with addenda through 2000, as modified by 10 CFR 50.55a. Subsection IWB of Section XI requires that the RPV support integral attachment weld be periodically subjected to a surface examination, and Article IWF 1000, the RPV supports are required to be periodically VT-3 visually examined.

Contrary to the above, the licensee failed to include the RPV supports in their ISI program and perform the required examinations. This violation existed from date of plant commencement of operations until March 28, 2013, when the licensee performed the required inspections. Because of very low safety significance, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. The violation was entered was entered into the licensee's corrective action program as condition report (CR) 13-0073. NCV 05000395/2013002-001, Failure to Perform Examinations of Reactor Pressure Vessel Supports.

#### 4OA6 Meetings, Including Exit

On April 17, 2013, 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.

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#### 4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being dispositioned as NCVs.

- 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," states in part that measures shall be established to assure that conditions adverse to quality (CAQ) are promptly identified and corrected. Contrary to the above, on August 26, 2012, the licensee returned the 'A' EDG to service, but failed to promptly identify and correct a CAQ involving an intermittent problem with the 'A' EDG's exciter circuit, where the exciter would fail to energize if the K1 relay did not reset properly. Additionally, on September 19, 2012, the 'A' EDG's exciter failed to start a second time due to the K1 relay failing to properly reset. This PD is more than minor and therefore a finding because it impacted the mitigating systems cornerstone objective to ensure the reliability and capability of systems which respond to initiating events and the related attribute of equipment performance because the reliability of the EDG was adversely affected by failure of the K1 relay. This finding is of very low safety significance, Green, because the K1 relay failures did not represent a loss of safety function of a single train for greater than the TS allowed outage time. The K1 relays for both EDGs have been replaced. This issue has been entered into the licensee's CAP under CR-12-03998.
- 10 CFR 50, Appendix B, Criterion III, "Design Control," states in part that measures shall be established to assure the design basis is correctly translated into specifications and drawings. Contrary to this, during original unit construction the licensee failed to assure that the design basis requirement for safety class SSCs protection against floods up to elevation 436.15' were correctly translated into specifications and drawings for entrances into those buildings containing safety class SSCs to ensure that floods would not have an adverse impact. This PD is more than minor because if left uncorrected it would have the potential to result in a more significant safety event because multiple buildings containing safety class SSCs were affected. The finding is of very low safety significance, Green, because the safety function was not completely failed and the finding did not involve the total loss of a safety function because other flood mitigation features involving floor drains and associated sump pumps internal to the buildings were not impaired. The licensee entered the problem into their CAP as CR-12-03267, and implemented compensatory measures to address the operable but degraded and nonconforming condition.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

J. Archie, Senior Vice President, Nuclear Operations  
A. Barbee, Director, Nuclear Training  
M. Browne, Manager, Quality Systems  
M. Coleman, Manager, Health Physics and Safety Services  
G. Douglass, Manager, Nuclear Protection Services  
T. Gatlin, Vice President, Nuclear Operations  
K. Gore, Manager, Organization Development and Performance  
M. Harmon, Manager, Chemistry Services  
R. Haselden, General Manager, Organizational / Development Effectiveness  
R. Justice, Manager, Nuclear Operations  
G. Lippard, General Manager, Nuclear Plant Operations  
M. Mosley, Manager, Nuclear Training  
M. Roberts, Supervisor, Health Physics II, New Plant, Environmental, Rad Waste  
D. Shue, Manager, Maintenance Services  
W. Stuart, General Manager, Engineering Services  
B. Thompson, Manager, Nuclear Licensing  
D. Weir, Manager, Plant Support Engineering  
B. Wetmore, Design Engineering  
R. Williamson, Manager, Emergency Planning  
S. Zarandi, General Manager, Nuclear Support Services

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened and Closed

05000395/2013002-01	NCV	Failure to Perform Examinations of Reactor Pressure Vessel Supports (Section 4OA5.4)
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#### Closed

05000395/2012-003-00	LER	Reactor Vessel Head Penetrations Not Meeting Requirements of 10 CFR 50.55a(g)(6)(ii)(D) (Section 4OA3)
TI 2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5.3)
05000395/2012005-03	URI	Reactor Vessel Supports Not Included in the Licensee's ASME Section XI ISI Program (Section 4OA5.4)

#### Discussed

TI 2515/182	TI	Review of the Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase 1 (Section 4OA5.2)
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## LIST OF DOCUMENTS REVIEWED

### **Section 1R06 Flood Protection Measures**

- Design Basis Document, ND System, "Drains, Sumps, and Leak Detection," Rev. 2
- UFSAR Section 7.6.5, Leakage Detection Systems
- IPE, Internal Flooding Analysis Notebook, April, 1993
- Mechanical Calculation PR-40, Flooding in AB and IB
- WO 1104871 and WO 1108490 for level switches ILS01967 and ILS01966 for calibrations of RHR sumps B and A, respectively

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

#### Procedures, Calculations and other Guidance Documents

- OAP-108.4, Operations Outage Control of Containment Penetration, Rev. 1D
- SAP-0152, Fatigue Management and Work Hour Limits, Rev. 10
- AOP-115.03, Loss of RHR With the RCS Intact, Rev. 3B
- GOP-5, Reactor Shutdown from Startup to Hot Standby (Mode 2 to Mode 3), Rev. 11G
- GOP-6, Plant Shutdown from Hot Standby to Cold Shutdown (Mode 3 to Mode 5), Rev. 13B
- GOP-2, Plant Startup and heatup (Mode 5 to Mode 3, Rev. 16C

### **Section 4OA5.2: Other Activities**

#### Procedures

- SAP-0156 License Renewal Management Program, Rev 0
- SAP-1258, Buried Piping Integrity Program, Rev 0
- CMP-400.001, Excavation Backfill and Earthwork, Rev 8
- EMP-500.003, Yard Piping Cathodic Protection, Rev 6A

#### Corrective Action Documents

- CR 09-05549, NEI-Buried Piping Industry Initiative, 12/15/2009
- CR 13-01134, NRC identified issues with TI-182 inspection, 03/13/2013

#### Other Documents

- Letter to R. W. Borchardt, NRC EDO, Revision to the Industry Initiative on Underground Piping and Tanks Integrity, February 8, 2013
- VC Summer Nuclear Station Unit 1, Buried Piping Examination Plan, Version 0, June 30, 2011
- EC S2 2012, VC Summer 2012 Cathodic Protection System Health Report

### **Section 4OA5.3: Other Activities**

- TR02060-001, Verification Walkdown Report for VCSNS Plant Flood Protection Features, Rev. 0
- Drawings, E-023-053 and E-412-062
- Procedure, ES-0437, "Inspections for Maintenance Rule – Structures," Rev. 1E

- CR-12-03267, Discrepancy in FSAR between maximum ponding level and safety-related building flood protection features
- OAP-109.1, "Severe Weather Guidelines," Rev. 3F, Enclosure E, "Guidelines for Sandbagging Ground Level Plant Doors"
- Certified topographical survey report, August 1, 2012

#### **Section 4OA5.4: Other Activities**

##### Corrective Action Documents

CR-13-00737 dated 02/14/2013

CR-12-01113 dated 03/16/2012

CR-12-02803 dated 07/05/2012

CR-13-00138 dated 01/09/2013

##### Drawings

DWG 1MS-07-057, Reactor Vessel Supports, Sheet 1, Rev. 13

DWG 1MS-07-153, Reactor Vessel Supports, Sheet 1, Rev. 01

DWG 1MS-07-126, Reactor vessel Assy. Outlet Nozzle, Rev. 01

DWG 1099E34, Standard 3 Loop Plant RV Support Hardware Details and Assembly

DWG 04 4461 E-511-236, Reactor Building - Reactor Vessel Special Steel Erection – Sections and Details, Rev. 07

DWG 04 4461 E-511-226, Reactor Building - Baffle Sections and Details, Rev. 16

DWG 04 4461 E-511-224, Reactor Building – Reactor Vessel Liner Plate Sections and Details, Rev. 06

DWG 04 4461 E-511-225, Reactor Building - Baffle Sections and Details, Rev. 14

DWG 04 4461 E-511-227, Reactor Building - Baffle Sections and Details, Rev. 15

DWG 04 4461 E-511-232, Reactor Building – Reactor Vessel Special Steel – Erection Plant at El. 426'- 8- 1/16", Rev. 19

DWG 04 4461 E-511-233, Reactor Building – Reactor Vessel Special Steel – Erection Plant at El. 430'- 9", Rev. 09

DWG 04 4461 E-511-234, Reactor Building – Reactor Vessel Special Steel – Erection Plant at El. 432'- 2-1/2", Rev. 04

DWG 04 4461 E-511-237, Reactor Building – Reactor Vessel Special Steel – Erection Sections and Details, Rev. 02

DWG 1MS-07-129-0, 157" PWR Inlet Nozzles, Rev. 07

DWG 590064011C, Inlet Nozzle Covers N2 A, B, and C, Nov. 06, 1975

##### Other Documents

Engineer's Technical Work Record, Serial AB 15517, Book 11, Tab 79 for Boric Acid Cleaning and Inspections per CER 00-1324

Third Interval Inservice Inspection Program Plan for V. C. Summer Nuclear Station, VCS Manual ISE-5, Rev. 04

Virgil C. Summer Design Basis Document, Reactor Building, Rev. 06

**LIST OF ACRONYMS**

AB	Auxiliary Building
ADAMS	Agency Document Access and Management System
ASME	American Society of Mechanical Engineers
BTRS	Boron Thermal Regeneration System
CAP	Corrective Action Program
CB	Control Building
CFR	Code of Federal Regulations
CR	Condition Report
DC	Direct Current
DG	Diesel Generator
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EP	Emergency Preparedness
ES	Engineering Services Procedure
FSAR	Final Safety Analysis Report
GTP	General Test Procedure
IB	Intermediate Building
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
kV	Kilovolt
LER	Licensee Event Report
MDEFW	Motor Driven Emergency Feedwater
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
OOS	Out of Service
PARS	Publicly Available Records
PD	Performance Deficiency
PI	Performance Indicator
PMT	Post-Maintenance Testing
RB	Reactor Building
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
REV	Revision
RF20	Refueling Outage Number 20
RHR	Residual Heat Removal
RTP	Rated Thermal Power
SAP	Station Administrative Procedure
SCE&G	South Carolina Electric and Gas

SDP	Significance Determination Process
SOP	System Operating Procedure
SRI	Senior Resident Inspector
SSC	System, Structures, and Components
STP	Surveillance Test Procedure
SW	Service Water
SWPH	Service Water Pumphouse
TDEFW	Turbine Driven Emergency Feedwater
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VCSNS	V.C. Summer Nuclear Station
WANO	World Association of Nuclear Operators
WO	Work Order