



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
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ATLANTA, GEORGIA 30303-8931

May 17, 2007

South Carolina Electric & Gas Company  
ATTN: Mr. Jeffrey B. Archie  
Vice President, Nuclear Operations  
Virgil C. Summer Nuclear Station  
P. O. Box 88  
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SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC TRIENNIAL FIRE  
PROTECTION INSPECTION REPORT NO. 05000395/2007006 AND  
EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Archie:

On April 5, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your V. C. Summer Nuclear Station. The enclosed report documents the inspection results, which were discussed at an exit meeting on that date, with you and 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.

The enclosed report documents one noncompliance that was identified during the inspection for which the NRC is exercising enforcement discretion. The NRC is not taking any enforcement action for the noncompliance because it meets the criteria of the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

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 component of NRC's document system (ADAMS).

SCE&G

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Sincerely,

**/RA/**

D. Charles Payne, Chief,  
Engineering Branch 2  
Division of Reactor Safety

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

Enclosure: Inspection Report 05000395/2007006  
w/Attachment; Supplemental Information

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**U.S. NUCLEAR REGULATORY COMMISSION**

## REGION II

Docket Nos: 50-395

License No.: NPF-12

Report No.: 05000395/2007006

Licensee: South Carolina Electric & Gas Company

Facility: Virgil C. Summer Nuclear Station

Location: Jenkinsville, South Carolina

Dates: March 19-23, 2007 [Week 1]  
April 2-6, 2007 [Week 2]

Inspectors: G. Wiseman, Senior Reactor Inspector (Lead Inspector)  
N. Merriweather, Senior Reactor Inspector (Week 1)  
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Accompanying Personnel: B. McKay, Reactor Inspector (Training) (Week 2)  
K. Miller, Reactor Inspector (Training) (Week 2)

Approved by: D. Charles Payne  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

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## SUMMARY OF FINDINGS

IR 05000395/2007-006; 3/19-23, 2007 and 4/2-6, 2007; Virgil C. Summer Nuclear Station (VCSNS); Fire Protection.

This report covers an announced two-week triennial fire protection inspection by three engineering inspectors from the U. S. Nuclear Regulatory Commission's (NRC's) Region II office located in Atlanta, Georgia and a resident inspector from the McGuire Nuclear Station. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

## REPORT DETAILS

**1. REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

**1R05 Fire Protection**

This report presents the results of a triennial fire protection inspection for a plant in transition to National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition." This inspection was conducted in accordance with NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection-NFPA 805 Transition Period (Triennial)." The objective of this inspection was to review the VCSNS fire protection program (FPP) for selected risk-significant fire areas (FA) and fire zones (FZ). The team selected three plant areas for detailed review to examine the licensee's implementation of the FPP. The team also reviewed automatic carbon dioxide (CO<sub>2</sub>) fire suppression systems in two other FAs identified in this report. The original three areas chosen for review were selected based on risk insights from the licensee's Individual Plant Examination for External Events, information contained in FPP documents, results of prior NRC triennial fire protection inspections, and in-plant tours by the inspectors. Section 71111.05-05 of the IP specifies a minimum sample size of three FAs. Detailed inspection of these three plant areas fulfills the procedure completion criteria. The three areas chosen were:

- Auxiliary Building (AB), FA AB -1, FZ AB-1.18.1, Elevation 436 feet (ft.)
- FA AB-1, FZ AB-1.29, Elevation 436 ft.
- Intermediate Building (IB), FA IB-25, FZ IB-25.1.2, Elevation 412 ft.

For each of the selected plant areas, the inspection team evaluated the licensee's FPP against the applicable NRC requirements. The specific documents reviewed by the team are listed in the Attachment.

**.01 Post-Fire Safe Shutdown From Main Control Room (Normal Shutdown)****a. Inspection Scope****Methodology**

The team reviewed the Appendix R Safe Shutdown Analysis (SSA), fire emergency procedures (FEPs), piping and instrumentation drawings, electrical drawings, the Final Safety Analysis Report (FSAR), and other supporting documents for postulated fires in FZs AB-1.18.1, AB-1.29, and IB-25.1.2. The review was performed to verify that hot and cold shutdown could be achieved and maintained from the main control room (MCR) for postulated fires in the selected FZs.

Enclosure

This review also included verification that shutdown from the MCR could be performed both with and without the availability of offsite power. Plant walkdowns were performed to verify that the plant configuration was consistent with that described in the Fire Protection Evaluation Report (FPER). These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring instrumentation and support systems functions. The team reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage.

### Operational Implementation

The team reviewed the adequacy of procedures utilized for post-fire safe shutdown (SSD) and performed a walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also reviewed selected operator actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits.

The team reviewed time critical actions, including those for selected components to prevent fire-induced spurious operation for decay heat removal required components. The team reviewed and walked down applicable sections of fire response procedures:

- FEP-1.0, "Fire Emergency Procedure Selection," Rev. 11
- FEP-2.0, "Train A Plant Shutdown to Hot Standby due to Fire," Rev. 4
- FEP-3.0, "Train B Plant Shutdown to Hot Standby due to Fire," Rev. 4

The team reviewed local operator manual actions (OMAs) to ensure that the actions could be implemented in accordance with plant procedures in the times necessary to support the SSD method for the applicable FZ and to verify that those actions met the criteria in Enclosure 2 of NRC IP 71111.05TTP. The team reviewed Primary Identification Program (PIP) corrective action documents 06-2271 and 07-0937, to verify that the licensee had identified OMAs for post-fire SSD in III.G.2 areas and had plans in place to keep these PIPs open to assess and track resolution of the manual action issue as part of the plant-wide risk evaluation for transition to NFPA 805.

### b. Findings

#### Failure to Protect Cables Associated With Air Operated Valve IFV-3541 in FZ IB-25.1.2

Introduction: A noncompliance of very low safety significance with VCSNS Operating License Condition 2.C.(18) was identified for the licensee's failure to protect or separate cabling associated with the Emergency Feedwater (EFW) pump discharge valve to the B Steam Generator routed through the Intermediate Building elevation 412 ft. (FZ IB-25.1.2). The EFW pump discharge valve to the B Steam Generator was required to remain operational to achieve and maintain safe shutdown for a postulated fire in FZ IB-25.1.2. The noncompliance met the criteria for NRC enforcement discretion.

Description: During review of procedure FEP-1.0, Enclosure B, Part 32, in conjunction with FEP-2.0, the team identified that the licensee utilized a local OMA to manually throttle open Air Operated Valve (AOV) IFV-3541 to prevent spurious operation due to potential fire damage during a postulated fire in FZ IB-25.1.2. AOV IFV-3541, the motor driven (MD) EFW pump discharge valve to the B Steam Generator, is normally open and is required to remain open to establish the EFW flowpath to the B Steam Generator from the MD EFW pumps. The FPER requires the A train (safe shutdown train) of EFW for SSD for a fire in FZ IB-25.1.2. Cables EFW102B and EFW146B for AOV IFV-3541 are located in IB-25.1.2 while the AOV itself is located on the mezzanine level of the adjacent FZ IB-25.1.3. This mezzanine is not physically independent of IB-25.1.2. The licensee failed to protect cables EFW102B and EFW146B from potential fire damage in IB-25.1.2. In lieu of protecting the required cables from fire damage, which could prevent modulation of the AOV and defeat the SSD strategy, the licensee instead took local control of the valve using a local OMA. The team performed a walk through of this local OMA to determine its feasibility per the criteria in Enclosure 2 to NRC IP 71111.05TTP, Fire Protection - NFPA 805 Transition Period (Triennial). Since the OMA would be performed in the adjacent FZ, smoke migration to this zone was a concern. The team determined the action to be feasible because the operator would be using a self-contained breathing apparatus (SCBA) and hand-held radio. Also, the two adjacent FZs are part of a very large FA, IB-25 (with a low fire hazard loading), and it would take time for a fire to grow large enough to create a significant amount of smoke where it could become a concern. Fire Area, IB-25.1.2 has area-wide automatic fire detection and suppression (sprinklers) which would most likely control the fire before damage to the cables would occur.

Analysis: Failure to protect required SSD equipment from potential fire damage is a performance deficiency and is more than minor because it is associated with the Mitigating Systems cornerstone attribute of protection against external events, i.e. fire, and it affects the objective of ensuring the reliability and capability of systems that respond to initiating events. The finding was determined to be of very low safety significance (Green) using the significance determination process in NRC Inspection Manual Chapter 0609, Appendix F. The finding was assigned a low degradation rating because it would take time for a fire to grow large enough to cause fire damage to IFV-3541 cabling and automatic fire detection and sprinklers in the area would most likely control the fire before damage to the cables would occur. The local OMA was determined to be feasible and reliable because it met the criteria of IP 71111.05TTP, Enclosure 2. As such, the local OMA was determined to be a compensatory measure for the lack of cable protection for required SSD component IFV-3541. PIPs 06-2271 and 07-0937 tracked the resolution of OMAs used to meet the requirements of Title 10 of the Code of Federal Regulations (CFR) Part 50 (hereafter referred to as 10 CFR 50), Appendix R, Section III.G.2.

Enforcement: License condition 2.C.(18) of VCSNS Operating License NPF-12 requires, in part, that the licensee implement and maintain in effect all provisions of the approved FPP as described in the FSAR for the facility, and as approved in the Safety Evaluation Report (SER) dated February 1981, and Supplements dated January 1982, and August 1982, and the safety evaluations dated May 22, 1986, November 26, 1986, and July 27, 1987.

Enclosure

VCSNS FSAR Section 9.5.1 states in part, that the provisions of 10 CFR 50, Appendix R, Sections III.G, III.J, III.O, and III.L apply to the FPP, and that the FPER is considered a part of the FSAR.

The VCSNS FPER identifies FZ IB-25.1.2 as a 10 CFR 50, Appendix R, Section III.G.2 area. Section III.G.1 of 10 CFR 50 Appendix R requires that cables for equipment relied upon to achieve and maintain SSD be free of fire damage. Section III.G.2 of Appendix R lists three options for satisfying the requirements for separation and protection of equipment needed to ensure SSD remains free of fire damage. The requirements of this section do not allow using manual actions in lieu of protection and separation. Contrary to the above, on April 5, 2007, the team discovered that the licensee utilized a non-approved local OMA as a compensatory measure in lieu of protecting cables EFW102B and EFW146B in FZ IB-25.1.2 as required by 10 CFR 50, Appendix R, Section III.G.2. This issue has existed for many years.

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and Reactor Oversight Process (ROP) discretion. The Enforcement Policy and ROP also state that the finding must not be evaluated as Red. On October 19, 2006, the licensee submitted a letter to the NRC stating its intent to transition to NFPA 805 in accordance with 10 CFR 50.48(c). In a followup letter from the NRC to the licensee dated January 19, 2007, the NRC acknowledged that a three year period of discretion will begin on October 19, 2006, and that the period of discretion will continue beyond the three year expiration date of October 19, 2009, while NRC staff is reviewing the license amendment request.

Because the licensee committed to adopt NFPA 805 and change their fire protection licensing bases to comply with 10 CFR 50.48(c), the NRC is exercising enforcement discretion for this issue in accordance with the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." Specifically, this issue would have been expected to be identified and addressed during the licensee's transition to NFPA 805, was entered into the licensee's corrective action program (CAP) and will be corrected, was not likely to have been previously identified by routine licensee efforts, was not willful, and was not associated with a finding of high safety significance. The licensee entered this issue in their CAP under PIP numbers 06-2271 and 07-0937.

## .02 Protection of Safe Shutdown Capabilities

### a. Inspection Scope

For the selected areas, the team evaluated the potential for fires, the combustible fire load characteristics, and the potential exposure fire severity. The team reviewed selected licensee maintenance procedures, plant station administrative procedures, system operating procedures, and programs for the control of ignition sources and transient combustibles.

Enclosure

These reviews were conducted to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FPP. The team walked down the selected plant FZs to observe (1) the material condition of fire protection systems and equipment, (2) the storage of permanent and transient combustible materials, (3) the administrative controls for limiting fire hazards, and (4) combustible waste collection, housekeeping practices, and cleanliness conditions were being implemented consistent with the FPER, administrative procedures, and other FPP procedures. The team conducted these reviews and walkdowns to assess whether the licensee was taking reasonable precautions to prevent fires from starting. The specific documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition of accessible passive fire barriers surrounding and within FZs AB-1.18, AB-1.29, and IB-25.1. Barriers in use included walls, ceilings, floors, structural steel fireproofing, mechanical and electrical penetration seals, fire doors, fire dampers and electrical raceway fire barrier systems (ERFBS). Construction details, design and installation drawings, qualifications testing documents and engineering analyses which established the ratings of fire barriers for the selected configurations were reviewed by the team. Where applicable, the team examined installed barriers to compare the configuration of the barrier to the rated configuration to verify that the as-built barrier configurations met design requirements, license commitments, standard industry practices and were either properly evaluated or qualified by appropriate fire endurance tests. The inspectors also reviewed the fire loading calculations to verify that the loading used by the licensee was appropriate for determining the fire resistive rating of the fire barriers.

Engineering evaluations and relevant deviations described in NRC SERs related to fire barriers were reviewed. This was accomplished to verify that the selected ERFBS met their design and licensing basis. In addition, a sample of completed surveillance and maintenance procedures for selected fire doors, fire dampers, penetration seals, and ERFBS were reviewed to ensure that these passive fire barrier features were properly inspected and maintained. The fire protection features included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team reviewed flow diagrams, cable routing information, system operating procedures, operational valve lineup procedures, and vendor documentation associated with the fire pumps and selected fire service system isolation valves. Using operating and valve alignment procedures, team members toured selected fire pumps and portions of the fire main piping system to evaluate material condition, consistency of as-built configurations with engineering drawings, and to verify correct system valve lineups. The common fire service water delivery and supply components were reviewed to assess if they could be damaged or inhibited by fire-induced failures of electrical power supplies or control circuits. In addition, the team reviewed periodic surveillance and operability flow test data for the electric and diesel driven fire pumps, and fire main loop isolation valves to assess whether the test program was sufficient to validate proper operation of the fire protection water supply system in accordance with its design requirements.

Through in-plant observation of systems, design document review and reference to the applicable NFPA codes and standards, the team evaluated the material condition and operational lineup of fire detection and water-type suppression systems. The appropriateness of detection and suppression methods for the category of fire hazards in the various FZs was evaluated. The team reviewed the VCSNS NFPA Code Review Report to determine if there were any outstanding code deviations for the selected areas. The pre-action sprinkler, fire hose, and standpipe systems in FZ IB-25.1.2 were inspected. Fire suppression systems were evaluated from source to discharge device including hydraulic calculations performed by the licensee to demonstrate adequate flow, pressure and water distribution. Additionally, the team reviewed the surveillance test procedures and alarm annunciator response procedures for the detection and alarm systems to determine compliance with the fire detection instrumentation requirements of procedure FPP-023.

The team reviewed the adequacy of the design and installation of the gaseous automatic CO<sub>2</sub> fire suppression systems for the FAs CB-436, CB-6 (Relay Room), and CB-7 (Plant Computer Room). This review included CO<sub>2</sub> fire suppression system controls to assure accessibility and functionality of the system, as well as associated ventilation system fire/CO<sub>2</sub> isolation dampers. The team also examined licensee design calculations, vendor certifications, and pre-operational test data to verify the required quantity of CO<sub>2</sub> for the area was available. Review of recent surveillance testing of the suppression system and associated detection system was performed to verify that system functionality was being maintained.

The team reviewed fire brigade staging and dress-out areas to assess the operational readiness of fire fighting and smoke control equipment. The fire brigade personal protective equipment and SCBA cylinder refill capability were reviewed for adequacy and functionality.

The team reviewed operator and fire brigade staffing, fire brigade response reports, offsite fire department communications and staging procedures, fire fighting pre-plan strategies, fire brigade qualification training, and the fire brigade drill program procedures. Twelve fire brigade response-to-drill scenarios and associated brigade drill evaluations/critiques that transpired over the last 3-year period were reviewed. Additionally, the team walked down the selected FZs to compare the associated fire pre-plan strategy drawings with as-built plant conditions and fire response procedures. This was done to verify that fire fighting pre-plan strategies and drawings were consistent with the fire protection features and potential fire conditions described in the FPER. The documents included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.05 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and in-plant walkdowns to verify that redundant trains of systems required for hot shutdown, where located in the same FA, were not subject to damage from fire suppression activities or from the rupture, or inadvertent operation of, fire suppression systems. The team considered the effects of water, drainage, heat, hot gasses, and smoke that could potentially damage all redundant trains or inhibit access to alternate shutdown equipment or performance of alternate safe shutdown operator actions. The team also reviewed engineering evaluations that addressed the inadvertent operation of fire protection systems and their effect on SSD capabilities.

b. Findings

No findings of significance were identified.

.06 Alternative Shutdown Capability

a. Inspection Scope

Shutdown capability for the FZs selected for inspection utilizing shutdown from outside the control room is discussed in Section 1R05.01 of this report.

.07 Circuit Analyses

a. Inspection Scope

This segment is suspended for plants in transition because a more detail review of cable routing and circuit analysis will be conducted as part of the fire protection program transition to NFPA 805.

However, a review of the licensee's cable tray and conduit layout drawings and cable routing information was used by the team to assess the adequacy of the licensee's fire response procedures in the selected areas. The results of these reviews are documented in Section IR05.01 of this report.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team reviewed plant communication capabilities to evaluate the availability of the communication systems to support plant personnel in the performance of local OMAs to achieve and maintain SSD conditions. During this review, the team considered the effects of ambient noise levels, clarity of reception, and reliability. The team reviewed the communication systems available at different locations in the plant. Both fixed and portable communication systems were reviewed for the impact of fire damage in the selected plant areas. A review was performed to verify the availability of the portable radios for use during the SSD procedures. In addition, the team reviewed the radio battery usage ratings for the radios stored and maintained on charging stations for operator use while performing the SSD procedure. The team also reviewed preventative maintenance and surveillance test records to verify that the communication equipment was being properly maintained.

The team reviewed the plant communication systems that would be relied upon to support fire event notification and fire brigade fire fighting activities to verify their availability. The team reviewed selected fire brigade drill evaluation/critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and to identify any history of operational or performance problems with radio communications during fire drills. In addition, the team reviewed the radio battery usage ratings for the fire brigade radios to verify their availability.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of fixed 8-hour battery pack emergency lights throughout the selected plant areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD. The team reviewed preventive maintenance procedures and completed surveillance tests to ensure adequate

surveillance testing and periodic battery replacements were in place to ensure reliable operation of the fixed and portable emergency lights. The team also reviewed vendor manuals to ensure that the emergency lights were being maintained consistent with the manufacturer's recommendations. Prior to the inspection, the licensee had discovered the installed emergency lighting batteries were not adequately sized to maintain the required 8-hour illumination time. The licensee documented this issue in PIP 07-0975, "Incorrect capacity battery installed in emergency lighting units (ELUs)." The team reviewed the apparent cause, extent of condition, and planned corrective actions this issue.

The team observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in the NFPA 101, "Life Safety Code," and the Occupational Safety and Health Administration Part 1910, "Occupational Safety and Health Standards." This review also included examination of whether backup ELUs were provided for the primary and secondary fire emergency equipment storage locker locations and dress-out areas in support of fire brigade operations should power fail during a fire emergency.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed the licensee's SSA to determine if any repairs were necessary to achieve cold shutdown. FEP-2.1, "Train A Shutdown from Hot Standby to Cold Shutdown due to Fire" and FEP-3.1, "Train B Shutdown from Hot Standby to Cold Shutdown due to Fire" described methods for repairing equipment, if necessary, following a fire, needed to bring the unit to cold shutdown. The team verified that electrical jumpers, as well as plastic air line jumpers, necessary to restore valves for remote operation were tagged and stored on-site for the sole purpose of damage control measures.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service, degraded, and/or inoperable fire protection features (e.g., detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing SSD functions or capabilities). The team reviewed the fire protection program impairment log for the selected FZs.

Enclosure

The compensatory measures that had been established in these areas were compared to those specified for the applicable fire protection feature. The team verified that the risk associated with removing the fire protection feature from service was properly assessed and the compensatory measures were implemented in accordance with the approved FPP. This review also verified that the licensee was effective in returning the equipment to service in a reasonable period of time. The team reviewed compensatory measures for PIP 07-0975, "Incorrect capacity battery installed in ELUs," to determine whether the licensee had taken appropriate immediate actions and implemented adequate compensatory measures to mitigate the issue.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

Corrective action program PIPs related to the VCSNS FPP, and the capability to successfully achieve and maintain the plant in a SSD condition following a plant fire, as well as selected fire brigade response, emergency / incidents, and selected electrical maintenance procedures were reviewed. This review was conducted to assess the frequency of fire incidents and effectiveness of the fire prevention program and any maintenance-related or material condition problems related to fire incidents.

The team reviewed other CAP documents, including completed corrective actions documented in selected PIPs, and operating experience program (OEP) documents to verify that industry-identified fire protection problems potentially or actually affecting VCSNS were appropriately entered into, and resolved by, the CAP process. Items included in the OEP effectiveness review were NRC Regulatory Issue Summaries, Information Notices, industry or vendor-generated reports of defects and noncompliance under 10 CFR Part 21, and vendor information letters. In addition, the team reviewed a sample of the fire protection program audits and self-assessments which the licensee performed in the previous one-year period to assess the types of findings that were generated and that the findings were appropriately entered into the licensee's CAP. The team evaluated the effectiveness of the corrective actions for a sample of identified issues. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On April 5, 2007, the lead inspector presented the inspection results to Mr. J. Archie and other members of his staff. Proprietary information is not included in this report.

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

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M. Browne, Manager, Quality Systems  
A. Cribb, Supervisor, Nuclear Licensing  
G. Douglass, Manager, Nuclear Protection Services  
M. Fowlkes, General Manager, Engineering Services  
R. Justice, Manager, Maintenance  
M. Kammer, Supervisor, Engineering  
T. Keckeisen, Supervisor, Fire Protection Operations  
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B. Stokes, Manager, Design Engineering  
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#### **NRC Personnel**

J. Zeiler, Senior Resident Inspector  
J. Polickoski, Resident Inspector

### **INSPECTION PROCEDURES USED**

IP 71111.05TTP

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

#### **Opened/Closed**

None

#### **Discussed**

None

## LIST OF DOCUMENTS REVIEWED

### **Section 1R05.03.a: List of Fire Barrier Features Inspected in Relation to Safe Shutdown Separation Requirements**

<u>Floors/Walls/Ceiling Identification</u>	<u>Description</u>
Vertical Gypsum Board Wall	FZ AB-1.29 to FZ AB-1.21.2
<u>Fire Damper Identification</u>	<u>Description</u>
XFD259	FZ AB-1.29 to FZ AB-1.21, Thru-wall 3-Hour Rated Damper
XFD260A/B	FZ AB-1.29 to FZ AB-1.21, AB-1.21.2, Thru-wall 3-Hour Rated Damper
<u>Fire Door Identification</u>	<u>Description</u>
AB401	FZ AB-1.18 to FZ IB 25.6, Watertight Door
AB501A	FZ AB-1.29 to FZ AB-1.21, 3-Hour Rated Door With Door Seals
PA201	FZ AB-1.18 to FZ IB 25.8, Watertight Door
<u>Fire Barrier Penetration Seal Identification</u>	<u>Description</u>
AB2156	FZ AB-1.29 to FZ AB-1.21.2, Thru-wall Kaowool Seal for 1-inch Conduit
AB2159	FZ AB-1.29 to FZ AB-1.21.2, Thru-wall Kaowool Seal for 1.5-inch Conduit
AB501	FZ AB-1.29 to FZ AB-1.21.2, Thru-wall Loyd's High Density Shielding Matrix Seal for 2 - inch Pipe
IB 126	FZ IB-25.1 to FZ IB-2, Thru-wall BISCO Silicone Foam Seal for 12" X 6" Cable Tray
IB293	FZ IB-25.1 to FZ IB-9, Thru-wall BISCO Silicone Foam Seal for 6 -inch Pipe

<u>ERFBS Identification</u>	<u>Description</u>
13-3M-3	FZ.AB-1.18, 3-Hour Rated 3-M Interam ERFBS For Raceways XX-3153C, XX2511C, XX2512C
34-TW	FZ.IB-25.1, 1-Hour Rated Triple Wrap Kaowool For Raceway SWL11A (2 Conduits)

### **Licensing Bases Documents**

Letter, South Carolina Electric & Gas Company to NRC, Fire Protection SER Open Item 1.6.10, dated 08/21/1981

Letter, South Carolina Electric & Gas Company to NRC, Virgil C. Summer Nuclear Station, Docket No. 50-395, Operating License No. NPF-12, Appendix R Reanalysis, dated 5/29/1985

Letter, South Carolina Electric & Gas Company to NRC, Virgil C. Summer Nuclear Station, Docket No. 50-395, Operating License No. NPF-12, Appendix R Reanalysis, dated 9/04/1985

Letter, South Carolina Electric & Gas Company to NRC, Virgil C. Summer Nuclear Station, Docket No. 50-395, Operating License No. NPF-12, Appendix R Reanalysis, dated 9/16/1985

Letter, South Carolina Electric & Gas Company to NRC, Virgil C. Summer Nuclear Station, Docket No. 50-395, Operating License No. NPF-12, Appendix R Reanalysis, dated 9/20/1985,

Letter, South Carolina Electric & Gas Company to NRC, Virgil C. Summer Nuclear Station, Docket No. 50-395, Operating License No. NPF-12, Appendix R Reanalysis, dated 1/01/1985

Letter, NRC to South Carolina Electric & Gas Company, Appendix R Reanalysis (Service Water Booster Pump "M" Board Barrier), dated 05/22/1986

Letter, NRC to South Carolina Electric & Gas Company, V.C. Summer Nuclear Station Appendix R Reanalysis (TAC NO. 57853), Docket No. 50-395, dated 07/27/1987

Letter, South Carolina Electric & Gas Company to NRC, RC-96-0236, Request for Deviation to Section III.G.2 of Appendix R to 10 CFR Part 50, dated 10/17/1996

Letter, South Carolina Electric & Gas Company to NRC, RC-97-0094, Request for Additional Information Regarding Deviations from 10 CFR Part 50, Appendix R, Section III.G., Fire Protection of Safe Shutdown Capability for Virgil C. Summer Nuclear Station, dated 05/01/1997

Letter, NRC to South Carolina Electric & Gas Company, TAC No. M977337, Deviation from 10 CFR Part 50, Appendix R, Section III.G (Use of Fire Resistant Cables) , Fire Protection of Safe Shutdown Capability for Virgil C. Summer Nuclear Station Safety Evaluation, dated 10/10/1997

Letter, South Carolina Electric & Gas Company to NRC, V. C. Summer Nuclear Station, RC-01-0053, Request for Revisions to Previously Accepted Deviations to the Criteria Within Section III.G.2.c to Appendix R of 10 CFR 50, dated 03/27/2001

V. C. Summer Nuclear Station, Operator License, Amendment Number 167, Updated Fire Protection Evaluation Report, Amendment 02-01, dated 04/23/2004

Letter, South Carolina Electric & Gas Company to NRC, V. C. Summer Nuclear Station Letter of Intent to Adopt NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition, dated 10/19/2006

Letter, NRC to South Carolina Electric & Gas Company, NRC Response to Letter of Intent to Adopt Title 10 of the Code of Federal Regulations, Part 50, Section 50.48(c) for V. C. Summer Nuclear Station, dated 01/19/2007  
 NUREG-0717, NRC Safety Evaluation Report, dated 02/81  
 NUREG-0717, Supplement No. 3, NRC Safety Evaluation Report, dated 01/82  
 NUREG-0717, Supplement No. 4, NRC Safety Evaluation Report, dated 08/82

### **Procedures**

EMP-230.001, Emergency Light Unit Battery Service Test, Rev. 12 Change A  
 EP-100, Radiation Emergency Plan, Rev. 46  
 EPP- 105, Conduct of Drills and Exercises, Rev. 6  
 FEP-1.0, Fire Emergency Procedure Selection, Rev. 11  
 FEP-2.0, Train A Plant Shutdown to Hot Standby due to Fire, Rev. 4  
 FEP-2.1, Train A Shutdown from Hot Standby to Cold Shutdown due to Fire, Rev. 3  
 FEP-3.0, Train B Plant Shutdown to Hot Standby due to Fire, Rev. 4  
 FEP-3.1, Train B Shutdown from Hot Standby to Cold Shutdown due to Fire, Rev. 3  
 FPP-020, Fire Protection Program Administration, Rev.4  
 FPP-022, Fire Prevention, Rev. 2  
 FPP-023, Fire Detection, Rev. 2  
 FPP-024, Fire Protection, Rev. 2  
 FPP-025, Fire Containment, Rev. 3  
 FPP-026, Fire / Hazmat Response, Rev. 2  
 FPP-027, Enclosure 6.2, Safe Shutdown, Rev. 2  
 NTM-II.13, Test Unit Training, Rev. 4  
 NTM-III.6, General Employee Training, Fire Protection Training, Rev. 15  
 OAP-100.6, Att. IVA, Control Room Conduct and Control of Shift Activities, Rev. 1  
 PTP-114.091, Flammable Liquid Locker Inspection, Rev. 3  
 SAP-131, Fire Protection Program, Rev. 6  
 SOP-509, Fire Suppression System , Rev. 17  
 SPP-114, Security Force Responsibilities During Emergencies, Rev. 16  
 STP-128.002, Fire Protection FPER Valve Lineup Verification, Rev. 17  
 STP-128.019, Semi-Annual Fire Door Inspection, Rev. 6  
 STP-128.021, Fire Service Water Flow Test, Rev. 10  
 FPP-027, Fire Protection Procedure, Safe Shutdown, Rev. 2  
 PTP-114.005, Battery Powered and 123 Volt DC Emergency Lights, Rev. 12  
 SAP-0133, Station Administrative Procedure, Design Control/Implementation and Interface, Rev. 13  
 SAP-999, Station Administrative Procedure, Corrective Action Program, Rev. 1  
 SAP-1356, Station Administrative Procedure, Cause Determination, Rev. 1

### **Technical Vendor Manuals and Vendor Information**

Clarification Sheet for LightGuard LEC-36 Battery  
 Data Sheet for Super Vac Smoke Ejector, Model P164E, dated 3/14/2007

Data Sheet for Motorola MTX-8250 Portable Two-Way Radio, dated 02/20/2006  
 Data Sheet for Air Balance Fire Dampers, Model 319W, 10/28/1977  
 Fire and Hose Stream Test Report for Loyd's Inc. CT-300L-150 High Density Shielding Lead Elastomer Penetration Seal, LITP-0384-1, dated 03/19/1984  
 Fire and Hose Stream Test Report for Brand Industrial Services (BISCO) Multiple Penetrants Sealed with 9' of SF-20 Silicone Foam, 748-225, dated 08/17/1990  
 Specification Sheet for LightGuard LC-310 Sealed Lead Calcium Battery, L2120, dated 3/01  
 Specification Sheet for LightGuard LC-310 Sealed Lead Calcium Battery, L2120R1, dated 5/03  
 Specification and Flow Data, Elkhart Brass, Model L-205-EB, Industrial Non-Shock Fog Nozzle, dated 12/17/03  
 Specification Sheet for Rockbestos Firezone R Cable, RSS-5-144, dated 2003  
 Specification Sheet for Installation and Repair of 3M Interam E-54 Series Flexible Mat, SP-0839, Rev. 0  
 Specification Sheet for Safety-Related HVAC System Ductwork, SP-221-044461-000, Rev. 11  
 Specification Sheet for Blast-Resistant and Watertight Doors and Frames, SP-631-044461-000, Rev. 6  
 Specification Sheet for True-Alarm Sensors, Simplex Fire Alarm Systems, 1MS-94B-1345, Sprinkler Discharge Characteristics, 1MS-94B-0523, Automatic Sprinkler Corporation, Issue 38E, Rev. 4

### **Applicable Codes and Standards**

Fire Protection Handbook, 17th Edition  
 NFPA 10, Installation of Portable Fire Extinguishers, 1975 Edition  
 NFPA 12, Carbon Dioxide Extinguishing Systems, 1973 Edition  
 NFPA 13, Installation of Sprinkler Systems, 1973 Edition  
 NFPA 14, Installation of Standpipe and Hose System, 1973 Edition  
 NFPA 30, Flammable and Combustible Liquids Code, 1993 Edition  
 NFPA 72, National Fire Alarm Code, 2000 Edition  
 NFPA 80, Fire Doors and Windows, 1973 Edition  
 NFPA 90A, Installation Air Conditioning and Ventilating Systems, 1973 Edition  
 NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition  
 NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated 01/99  
 Occupational Safety and Health Administration Standard 29 CFR 1910, Occupational Safety and Health Standards  
 Underwriters Laboratory Standard 401, Standard for Portable Spray Hose Nozzles for Fire Protection Service, Third Edition, dated 08/27/93  
 Underwriters Laboratory Standard 555, Standard for Fire Dampers and Ceiling Dampers, dated 05/14/79

### **Completed Surveillance Procedures and Test Records**

CMP-700.011, Fire Hose Station Flow Check, PMTS0603148, performed 07/31/2006  
 EMP230.001, Emergency Battery Light Test Results for XBA 5000, 5004, 5011, 5017, 5021, 5053, 5067, 5073, 5077, 5095, 5105, 5117, 5119, 5121, 5148  
 PTP-114.045, IB Sprinkler System Strainer Flush, PMTS0610509, performed 07/20/2006  
 PTP114.005 Emergency Battery Light Test Results for XBA 5000, 5004, 5011, 5017, 5021, 5053, 5067, 5073, 5077, 5095, 5105, 5117, 5119, 5121, 5148  
 STP-128.00, Fire Hose Station Quarterly Inspection, STTS0700120, performed 03/18/2007  
 STP-128.002, Valve Lineup Verification to Hose Reels and IB Sprinkler System, STTS0615286, performed 03/14/2007  
 STP-128.003, Valve Cycle to Hose Reels and IB Sprinkler System, STTS0607419, performed 02/27/2006  
 STP-128.302, IB Sprinkler System Operability Test, STTS0602813, performed 07/18/2006  
 STP-128.302, IB Smoke Detector Functional Test, Detection Zone AA, STTS0602813 performed 07/18/2006  
 STP-128.319D, AB Smoke Detector Functional Test, Detection Zone Q, TS0613946performed 08/01/2006  
 STP-128.319I, AB Smoke Detector Functional Test, Detection Zone HH, STTS0613946, performed 03/13/2007  
 Technical Work Record LC 13109, SAP-107 Evaluation for ECR-50371 & RN 04-022, Tab 600, June 14, 2004  
 Work Orders for Emergency Light Battery Service tests: 418399, 418615, 0500351, 0500498, 503089, 0523764, 0602608, 00611087

### **Job Performance Measures**

JPS-134, CRS Duties for Fire Zone RB-1.1.1  
 JPP-401, Perform Duties of 'A' RO for Fire in Zone CB-2  
 JPP-205, Cross Train Connection of Battery Charger XBC1A-1B  
 JPP-200, Intermediate Building Operator Actions For FEP-2.0

### **Calculations and Analyses**

DC00040-088, App. R - Time Critical Actions, Rev. 2  
 DC0780428-7, Ionization Detection Layout - IB 412', dated 08/24/1990  
 DC-0780-0428-7, Ionization Detection Layout - AB 463', dated 11/21/1992  
 DC-07810-015, IB 412' and 436' Sprinkler System Hydraulic Analysis, dated 05/26/2004  
 DC-07850-008, Smoke Detection-Backup Transformer Area, dated 08/11/1981  
 DC08620-025, Appendix R Evaluation Phase II Composite Equipment List  
 DC08620-041, Appendix R Selected Circuits and Equipment, Rev. 8  
 DC08620-044, "Selected" Success Path Diagrams - CR  
 DC08620-045, "Success" Path Diagrams - NCR  
 DC08620-046, Electrical Cable Insulation Fire Loading, dated 06/22/1999  
 DC08620-047, Electrical Cabinets Fire Loading, dated 03/11/1999

DC0862A-003, Appendix R Resolutions of Deviations for Fire Area/Zone List  
 Engineering Evaluation Part Notebook 01-0630-0010-02  
 Fire Protection Evaluations of Changes to Designated Transient Storage Areas for Selected  
 Plant Areas, SAP-142, Attachment 1, Rev. 12  
 FPEE-P1465-003-001, Engineering Evaluation of Penetrations With Opening Sizes Equal to  
 Penetrant Size, Rev. 1  
 FPEE-P1465-003-004, Engineering Evaluation for Kaowool Seal Material, Rev. 0  
 LITP-0384-1, JG15995, Test Report Summary for Loyd's Inc. Lead Elastomer Penetration Seal,  
 dated 05/31/2000  
 748-225, JG15995, Test Report Summary for Brand Industrial Services (BISCO) Silicone Foam  
 Penetration Seal, dated 03/08/2000

### **Deviation Evaluations**

TR 08620-004 Package 64, Emergency Feedwater Flow Control Valve Failure  
 TR 08620-004, Section 4.4.25.4, Deviation Package for C Chiller manual actions  
 TR07800-004, NFPA Code Review Report, Rev. 0

### **Audits and Self Assessment Reports**

EIR-81275, Manual Operator Actions Timeline Assessment  
 SA07-OP-03, Self-Assessment Report, Fire Emergency Procedure Manual Actions Self-  
 Assessment, 12-15 February 2007  
 QA-AUD-200508-0, Annual and Biennial Fire Protection Audit, dated 05.23/2005  
 QA-AUD-200606-0, Annual Fire Protection Audit, dated 05.17/2006

### **Drawings**

1MS-55-137, Sheet 5, Intermediate Building EL. 412' Automatic Sprinklers, Rev. 8  
 B-208-021, Seal Water Injection Filter Isolation Valve XVT8102B, Sheet 11, Rev. 8  
 B-208-021, Seal Water Injection Filter Isolation Valve XVT8102C, Sheet 12, Rev. 8  
 B-208-021, Reactor Cooling System Spray XVT-8145, Sh. 80, Rev. 2  
 B-208-032, EF Sheet 02, Motor Driven Emergency Feedwater Pump B, Rev. 6  
 B-208-032, EF Sheet 02, Motor Driven Emergency Feedwater Pump B, Rev. 7  
 B-208-032, EF 35A, EF Isolation from Motor Driven Pump to Steam Generator "B" IFV-3541,  
 Rev. 9  
 B-208-032, EF 35B, EF Isolation from Motor Driven Pump to Steam Generator "B" IFV-3541,  
 Rev. 8  
 B-208-066, Safety Injection ESF Monitor Lights, Rev. 8  
 B-208-067, Power Relief Valve IPV-2020, Sh. 22A Rev. 7  
 B-208-067, Power Relief Valve IPV-2010, Sh. 21A Rev. 7  
 B-208-067, Power Relief Valve IPV-2000, Sh. 20A Rev. 7  
 B-208-082, Pressurizer Power Relief Valve PCV-445A, Sh. 51, Rev. 15  
 B-208-082, Pressurizer Power Relief Valve PCV-445B, Sh. 52, Rev. 12  
 B-208-082, Pressurizer Power Relief Valve PCV-445C, Sh. 50, Rev. 15  
 B-208-101, "A" Train SW Inlet to HVAC Chiller "C" XVB3128A, Sheet 88, Rev. 6

B-208-101, SW Inlet to HVAC Chiller "A" XVB3126A, Sheet 86, Rev. 6  
 B-208-108, Emergency Feedwater Pump Cooling Unit Fan A, Sheet 30, Rev. 3  
 B-208-108.VL.30, Emergency Feedwater Pump Area Cooling Unit Fan A XFN83A  
 D-101-017, Intermediate Building Floor Plan EL 412  
 D-101-017, Intermediate Building Floor Plan, Elevations 412', 424' and 423', Rev. 17  
 D-302-085, Emergency Feedwater (Nuclear), Rev. 40  
 D-302-231 series, Flow Diagram, Fire Service Loop, Manifolds Piping, and Pumps, Rev. 37  
 D-302-611, Component Cooling, Rev. 37  
 D-302-612, Component Cooling System Inside Reactor Building, Rev. 24  
 D-912-130, Flow Diagram, Auxiliary Building HVAC Main Exhaust System, Rev. 23  
 D-912-132, Flow Diagram, Auxiliary Building HVAC Room Cooling, Rev. 21  
 D-912-158, Flow Diagram, Intermediate Building Ventilation and Pump Area Cooling Systems, Rev. 16  
 E-023-001 to 019, Special Plant Layout, Fire Protection Evaluation, Rev. 20  
 E-023-007, Fire Protection Evaluation, Intermediate and Diesel Buildings Elevation 412', Rev. 20  
 E-023-008, Fire Protection Evaluation, Auxiliary Building, Reactor and Fuel Handling Building Mezzanine 436', Rev. 18  
 E-023-009, Fire Protection Evaluation, Auxiliary Building Elevation 446' and 452', Rev. 7  
 E-023-011, Fire Protection Evaluation, Auxiliary Building, Reactor and Fuel Handling Building Elevation 463', Rev. 10  
 E-023-021, Fire Protection Evaluation, Drumming Station and Hot Machine Shop, Rev. 11  
 E-201-240, Kaowool Triple Wrap Upgrade, Rev. 1  
 E-206-005, Simplified Plant Electrical Distribution, Rev. 21  
 E-206-011, Balance of Plant Power System One Line and Relay Diagram, Rev. 19  
 E-206-012, Engineered Safety Features System One Line and Relay Diagram, Rev. 27  
 E-206-032, Electrical One Line Diagram, Motor Driven Fire Pump, Rev. 21  
 E-206-041, Electrical One Line Diagram, Diesel Driven Fire Pump Controller, Rev. 21  
 E-206-080, 125V DC Disconnect Switch Power Feeds for Appendix R Valves, Rev. 0  
 E-214-078, Arrangement of Cable Trays, Auxiliary Building North above Elevation 436', Rev. 9  
 E-214-079, Arrangement of Cable Trays, Auxiliary Building South above Elevation 436', Rev. 16  
 E-214-081, Arrangement of Cable Trays, Auxiliary Building South above Elevation 436', Rev. 20  
 E-214-131, Arrangement of Cable Trays, Intermediate Building West above Elevation 412', Rev. 24  
 E-215-078, Conduit Layout, Auxiliary Building North above Elevation 436', Rev. 69  
 E-215-079, Conduit Layout, Auxiliary Building South above Elevation 436', Rev. 67  
 E-215-081, Conduit Layout, Auxiliary Building South above Elevation 463', Rev. 89  
 E-215-131, Conduit Layout, Intermediate Building West above Elevation 412', Rev. 66  
 E-215-191, Conduit Layout, Intermediate Building, Rev. 27  
 E-221-621, Intermediate Building Electrical Conduit Layout-Fire Detectors, Rev. 5  
 E-221-652, Auxiliary Building Electrical Conduit Layout-Fire Detectors, Rev. 4  
 E-221-653, Auxiliary Building Electrical Conduit Layout-Fire Detectors, Rev. 1  
 E-229-001, 230kV Substation Arrangement General Arrangement, Rev 8  
 E-229-004, 230 kV Substation Arrangement Sections, Sheet 1, Rev. 5  
 E-229-006, Overhead Line Arrangement 230 kV and 115 kV Outdoor Transformer Area, Rev. 4

E-229-054, 238kV Substation Layout One Line Diagram, Rev. 7  
 E-302-231, Flow Diagram, Auxiliary Building, Fire Service, Rev. 4  
 E-302-675, Chemical and Volume Control, Rev. 24  
 E-302-601, Reactor Coolant, Rev. 18  
 E-302-691, Safety Injection, Rev. 13  
 E-513-116, Miscellaneous Board Fire Barrier Support Details Plans and Sections, Intermediate Building, Rev. 1  
 E-513-117, Miscellaneous Board Fire Barrier Support Details Sections and Details, Intermediate Building, Rev. 1  
 E-922-212, Auxiliary Building Ventilation Duct Layout, Rev. 16  
 S-903-053, Fire Damper Schedule, Rev. 5  
 SS-211-021, Electrical Block Diagram, Chemical and Volume Control System, Sheet C6, Rev. J  
 SS-211-021, Electrical Block Diagram, Chemical and Volume Control System, Sheet C7, Rev. G  
 S-211-032, Electrical Block Diagram, Emergency Feedwater System, Sheet W5, Rev. D  
 SS-211-032, Electrical Block Diagram, Emergency Feedwater System, Sheet W6, Rev. G  
 SS-211-032, Electrical Block Diagram, Emergency Feedwater System, Sheet W11, Rev. H  
 SS-211-032, Electrical Block Diagram, Emergency Feedwater System, Sheet W15, Rev. A  
 SS-211-032, Electrical Block Diagram, Emergency Feedwater System, Sheet Y2, Rev. B  
 SS-211-066, Electrical Block Diagram, Miscellaneous Instruments System, Sheet W30, Rev. H  
 SS-211-067, Electrical Block Diagram, Main Steam System, Sheet U5, Rev. G  
 SS-211-075, Electrical Block Diagram, Main Control Board System, Sheet VI, Rev. D  
 SS-211-101, Electrical Block Diagram, Service Water System, Sheet C35, Rev. D  
 SS-211-101, Electrical Block Diagram, Service Water System, Sheet C33, Rev. C

### **Primary Identification Program (PIP) Reports Reviewed**

02-0774, Emergency Light Batteries in Warehouse Are Not Exact Replacements for Installed Units  
 04-3894, Overheated Disconnect Switch in Sand Blaster  
 05-1685, Smoke from Reactor Building Refuel Cavity  
 05-3377, Lessons Learned from 8/25/05 Fire Brigade Response  
 06-0121, Restroom Facility Building Fire at Firing Range  
 06-0952, Emergency Light Batteries Failing Service Test  
 06-1121, Track Recommendations from Quarterly Fire Brigade Drills (1<sup>st</sup> quarter 06)  
 06-2271, Manual Actions Self-Assessment  
 06-3088, SCBA Regulator Damaged During Fire Brigade Drill  
 06-3221, Track Recommendations from Quarterly Fire Brigade Drills (3<sup>rd</sup> quarter 06)  
 06-4191, Paint Storage Building Fire at Fairfield Pump Storage  
 06-4438, Track Recommendations from Quarterly Fire Brigade Drills(4<sup>th</sup> quarter 06)  
 07-0590, Communications Systems Power Supplies  
 07-0937, Fire Emergency Procedure Manual Actions Self-Assessment  
 07-0975, Incorrect Capacity Battery Installed in Emergency Lighting Units

### **PIPs, and Procedure Feedbacks Generated During this Inspection**

06-2271, Regulatory Document RIS 2006-10 needs to be reviewed for applicability to VCSNS  
 06-2739, Action 2, NFPA 805 Item, Periodic Inspection of Risk Significant Fire Areas  
 Procedure Feedback, SOP-509, Fire Suppression System, Revision 17, Change E: Evaluate  
 Sealing Valves XVA06990 and 06992 in Open Position, dated 03/20/2007

### **Other Documents**

Fire Emergency Reports, for Period January 2004 through November 2006  
 Fire Drill Summary and Response Time Reports for 12 Fire Brigade Drills conducted  
 2004 through 2006  
 Fire Brigade Leader Checklist  
 FEP Manning Sheets for Selected Operator Shifts During 2006 and 2007  
 Fire Protection Program Log for Systems/Equipment Out of Service for Period December 2004  
 through November 2006  
 Fire Protection Pre-Fire Plan, AB 436 & Hot Machine Shop, dated 08/01/2005  
 Fire Protection Pre-Fire Plan, AB 463, dated 08/01/2005  
 Fire Protection Pre-Fire Plan, IB 412, 423'-6' Slab & EPAA-412, dated 08/01/2005  
 Instructor's Lesson Plan, C-FP-19, Indoctrination of Off-Site Fire Companies, Revision 8  
 Instructor's Lesson Plan, C-FPFB-PA09, Fire Fighting Strategies, Revision 9  
 Offsite Fire Department Training and Drill Reports, for October 2004, and April 2006  
 Fire Test Report, Loyd's Inc., Fire Test LITP-0384-1 for CT-300L-150 High Density Shielding  
 Matrix Penetration Seal Material, dated 03/19/1984  
 Fire Test Report, Babcock and Wilcox, Refractory Division, Fire Test by Construction  
 Technology Laboratories for Three 1-in. Layers of Kaowool, dated 06/1979  
 Purchase Order NU-02NN717332 to Wholesale Industrial Electronics, Inc., February 19, 2003

### **LIST OF ACRONYMS**

AB	Auxiliary Building
AOV	Air Operated Valve
CAP	Corrective Action Program
CB	Control Building
CFR	Code of Federal Regulations
CO <sub>2</sub>	carbon dioxide
EFW	Emergency Feedwater
ELU	Emergency Lighting Unit
ERFBS	Electrical Raceway Fire Barrier System
FA	fire area
FEP	Fire Emergency Procedure
FSAR	Final Safety Analysis Report
FPER	Fire Protection Evaluation Report
FPP	Fire Protection Program

ft	foot
FZ	fire zone
IB	Intermediate Building
IP	Inspection Procedure
MCR	main control room
MD	motor driven
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
OEP	operating experience program
OMA	operator manual action
ROP	Reactor Oversight Process
SCBA	Self-Contained Breathing Apparatus
SER	Safety Evaluation Report
SSA	Safe Shutdown Analysis
SSD	safe shutdown
VCSNS	Virgil C. Summer Nuclear Station