



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

July 27, 2012

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 05000395/2012003**

Dear Mr. Gatlin:

On June 30, 2012, 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 July 24, 2012, 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.

This report documents one NRC-identified finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements. The NRC is treating this finding as a non-cited violation (NCV) consistent with Section 2.3.2. of the NRC Enforcement Policy. If you contest this NCV, 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

2

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 05000395/2012003
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

T. Gatlin

2

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 05000395/2012003
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

X PUBLICLY AVAILABLE

☐ NON-PUBLICLY AVAILABLE

☐ SENSITIVE

X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER: ML12212A145

XSUNSI REVIEW COMPLETE X FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRp			
SIGNATURE	JTR	ETC1	/RA By GMcCoy/	/RA/			
NAME	JReece	ECoffman	SNinh	GMcCoy			
DATE5	7/26/2012	7/26/2012	7 27 /2012	7/ 27 /2012			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY
03 REV 6.DOCX

DOCUMENT NAME: G:\DRPI\RPB5\SUMMER\REPORTS\2012\IR 2012-003\SUM SRI 2012-

T. Gatlin

3

cc w/encl:

J. B. Archie
Senior Vice President
Nuclear Operations and Chief Nuclear
Officer
South Carolina Electric & Gas Company
Electronic Mail Distribution

George A. Lippard, III
General Manager
Nuclear Plant Operations
South Carolina Electric & Gas Company
Electronic Mail Distribution

Andy T. Barbee
Director
Nuclear Training
South Carolina Electric & Gas Company
Electronic Mail Distribution

Wayne D. Stuart
General Manager
Engineering Services
South Carolina Electric & Gas Company
Electronic Mail Distribution

Robin R. Haselden
General Manager
Organizational Development &
Effectiveness
South Carolina Electric & Gas Company
Electronic Mail Distribution

Shaun M. Zarandi
General Manager
Nuclear Support Services
South Carolina Electric & Gas Company
Electronic Mail Distribution

Robert L. Justice
Manager
Nuclear Operations
South Carolina Electric & Gas Company
Electronic Mail Distribution

Bruce L. Thompson
Manager
Nuclear Licensing (Mail Code 830)
South Carolina Electric & Gas Company
Electronic Mail Distribution

Donna W. Railey
Licensing Technician
Nuclear Licensing
South Carolina Electric & Gas Company
Electronic Mail Distribution

Robin J. White
Nuclear Coordinator
S.C. Public Service Authority Mail Code 802
Electronic Mail Distribution

Susan E. Jenkins
SC Department of Health & Environmental
Control
Bureau of Land and Waste Management
Electronic Mail Distribution

Sandra Threatt, Manager
Nuclear Response and Emergency
Environmental Surveillance
Bureau of Land and Waste Management
Department of Health and Environmental
Control
Electronic Mail Distribution

Kathryn M. Sutton, Esq.
Morgan, Lewis & Bockius LLP
Electronic Mail Distribution

Division of Radiological Health
TN Dept. of Environment & Conservation
401 Church Street
Nashville, TN 37243-1532

Senior Resident Inspector
Virgil C. Summer Nuclear Station
U.S. NRC
576 Stairway Road
Jenkinsville, SC 29065

T. Gatlin

4

Letter to Thomas D. Gatlin from Gerald J. McCoy dated July 27, 2012

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION
REPORT 05000395/2012003

Distribution w/encl:

C. Evans, RII

L. Douglas, RII

OE Mail

RIDSNRRDIRS

PUBLIC

RidsNrrPMSummer Resource

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No. 50-395

License No. NPF-12

Report No. 05000395/2012003

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

Facility: Virgil C. Summer Nuclear Station

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

Dates: April 1, 2012 through June 30, 2012

Inspectors: J. Reece, Senior Resident Inspector
E. Coffman, Resident Inspector

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

Enclosure

SUMMARY OF FINDINGS

IR 05000395/2012003; 04/01/2012 - 06/30/2012: Virgil C. Summer Nuclear Station; Other Activities

The report covered a three month period of inspection by resident 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: Mitigating Systems

- Green. The NRC identified an apparent violation of V.C. Summer Nuclear Station's Renewed Operating License NPF-12, 2.C(18), "Fire Protection System," with two examples for the failure to comply with Fire Protection Program (FPP) requirements in which the licensee used unapproved fire hoses. Specifically, the licensee selected non-collapsible hose with an incorrect minimum bend radius and failed to use lined fire hose. The issue was entered into the licensee's corrective action program as condition reports (CR), CR-11-05578 and CR-11-05852.

The inspectors determined that the procurement and use of the fire hose, which was not in accordance with the FPP, was a performance deficiency (PD). The inspectors also reviewed Inspection Manual Chapter (IMC) 0612, Appendix B and determined the PD is more than minor and therefore a finding, because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of protection against external factors such as fire. The inspectors reviewed IMC 0609, Appendix F, Attachments 1 and 2, and determined that the finding was potentially of moderate safety significance because the non-collapsible rubber hose and portable extinguishers are the only local means of fire suppression for several fire zones, of which the most significant are the 7.2 kV safety-related switchgear rooms. The inspectors determined that because multiple fire areas were affected, a phase 3 SDP risk assessment was required. The phase 3 SDP risk assessment was performed by a regional senior reactor analyst using the guidance of NRC IMC 0609 Appendix F and NUREG/CR 6850, Revisions 0 and 1. Significant assumptions affecting the analysis are listed in the analysis section of 4OA5.2. The conditional core damage probability for the various fire scenarios was developed using the NRC's latest V.C. Summer Saphire 8 SPAR model. The risk was mitigated by the fact that most of the failed hoses served areas which were equipped with fixed suppression and that the areas served by the failed hoses did not contain many fixed ignition sources. The result of the phase 3

Enclosure

analysis was that the performance deficiency resulted in an increase in core damage frequency of $<1\text{E-}6$ per year, a GREEN finding of very low safety significance. The cause of the finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of procedural compliance, H.4(b), because the licensee failed to follow FPP procedural and program requirements for proper fire hose selection and use. (Section 4OA5.2)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period at full rated thermal power (RTP) and operated at or near full RTP for the remainder of the quarter.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Offsite and Alternate Alternating Current (AC) Power

a. Inspection Scope

The inspectors evaluated the readiness of the offsite and alternate AC power systems by reviewing the licensee's procedures that address measures to monitor and maintain the availability and reliability of the offsite and alternate AC power systems. The procedures reviewed included those involved with the communication protocols between the plant and transmission system operator to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. In addition, the inspectors performed a walkdown of electrical equipment in the switchyard and associated relay control building to ensure any degradations or adverse material conditions were identified in the licensee's corrective action (CAP) and were being appropriately addressed in a manner commensurate with their significance. The documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings were identified.

.2 Seasonal Weather Susceptibilities

a. Inspection Scope

The inspectors performed one adverse weather inspection for readiness of hot weather conditions and walked down two safety-related areas, the emergency diesel generator (EDG) building and the service water (SW) pumphouse, to verify the proper operation of cooling systems for these areas. Specifically, the inspectors verified the licensee had implemented applicable sections of operations administrative procedure (OAP)-109.1, Revision (Rev.) 3, Change C, "Guidelines for Severe Weather." Additionally, the inspectors reviewed licensee plant computer data associated with the aforementioned areas to ensure that temperatures were within their expected operational range to prevent any challenge to equipment operation. The inspectors also verified the licensee

Enclosure

took appropriate actions for temperatures exceeding administrative limits. The inspectors reviewed the licensee's CAP database to verify that high temperature weather related problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three partial equipment alignment walkdowns which are listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). Correct alignment and operating conditions were determined from the applicable portions of drawings, system operating procedures (SOP), and technical specifications (TS). The inspections included review of outstanding maintenance work orders (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. Documents reviewed are listed in the Attachment.

- Cross-train walkdown of 'B' train reactor building (RB) spray pumps during planned maintenance of the 'A' RB spray pump
- Cross-train walkdown of 'B' emergency feedwater (EFW) and turbine driven emergency feedwater (TDEFW) pumps during planned maintenance of the 'A' motor driven (MDEFW) pump
- 'A' residual heat removal (RHR) system during planned maintenance on 'B' RHR components

b. Findings

No findings were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a detailed review and walkdown of the reactor building cooling unit and respective SW system interface to identify any discrepancies between the current operating system equipment lineup and the designed lineup. In addition, the inspectors reviewed SOPs, applicable sections of the final safety analysis report (FSAR), design basis document, plant drawings, completed surveillance procedures, outstanding WOs, system health reports, and related CRs to verify that the licensee had properly

Enclosure

identified and resolved equipment problems that could affect the availability and operability of the system. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings were identified.

1R05 Fire Protection

Fire Protection Tours

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):

- Auxiliary building 397'/388' elevation (fire zone AB-1.4)
- Auxiliary building 397' elevation (fire zone AB-1.8)
- 1DB switchgear rooms and HVAC rooms (fire zones IB-16, IB-17, IB-22.2)
- Intermediate building 412' elevation (fire zones IB-27, IB-1, IB-2, IB-3, IB-4 and IB-5)
- Relay room solid state protection system (SSPS) instrumentation and inverter (fire zones CB-6, CB-10, CB-12)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed and walked down portions of the diesel building which includes in part the risk significant structures, systems, and components (SSCs) for emergency diesel generators and service water. The inspectors reviewed the associated flood design calculations, the licensee's preventative maintenance program measures for respective sump pumps and level instrumentation, and the licensee's CAP database to verify that internal flood protection problems were appropriately entered into the CAP and resolutions were adequate. Documents reviewed are listed in the attachment.

Enclosure

b. Findings

No findings were identified.

.2 Annual Review of Electrical Manholes

a. Inspection Scope

The inspectors reviewed and observed licensee periodic inspection of two safety-related electrical manholes (EMH), EMH-001 and EMH-002 (containing 'A' and 'B' 7.2 kV cables to service water pumps), to assess for leaks and perform repairs, inspect cable supports and structures, and to verify integrity following flooded conditions. The inspectors verified by direct observation and review of the associated inspection documents that the cables, splices, support structures, and sump pumps located within the manholes appeared intact and the cables were not being impacted by water. In addition, the inspectors reviewed several past periodic licensee inspection results for each of the above mentioned manholes to ensure that any degraded conditions identified were appropriately resolved. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

a. Inspection Scope

The inspectors observed an operator regualification simulator scenario occurring on June 11, 2012, which involved the failures of a reactor coolant system (RCS) loop temperature detector and the pressurizer master level controller, a trip of a condensate pump, two control rods which failed to insert during a reactor trip, and a steam generator tube leak that developed into a tube rupture. 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.

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 (MPFFs) 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-11-01807, Maintenance rule evaluation for missing bolts on control rod drive mechanism (CRDM) cable bridge
- CR-11-06124, Seal leak on sodium hydroxide pump results in tank level below TS limit

b. Findings

No findings relating to application of the MR were identified.

1R13 Maintenance Risk Assessments 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 2012-15, risk assessment for scheduled work activities associated with switchyard upgrades, 'B' component cooling water (CCW) heat exchanger, Parr switchyard, and cross-train inspection of batteries

- Work Week 2012-20, risk assessment for scheduled work activities associated with switchyard upgrades
- Work Week 2012-21, risk assessment for scheduled work activities associated with switchyard upgrades, 'B' EDG testing and 'B' RHR testing
- Work Week 2012-26, risk assessment for emergent activities associated with 'C' SW pump lower bearing cooling flow indicator
- Work Week 2012-27, risk assessments for switchyard upgrade activities and SSPS testing

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six 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. Also, the inspectors verified that the operability evaluations were performed in accordance with SAP-209, Rev. 0, Change F, "Operability Determination Process," and SAP-999, Rev. 9, Change B, "Corrective Action Program."

- CR-11-01807, missing bolts on CRDM cable bridge
- CR-11-06124, seal leak in sodium hydroxide pump results in tank level below TS limit
- CR-12-00162, hot gas bypass valve not functioning on 'A' chiller
- CR-12-00400, ground water leak of 3 – 5 gpm at safety-related manhole, EMH-002
- CR-12-00899, feedwater isolation valves (FWIVs) operable but degraded
- CR-12-01645, FWIVs are not stroke tested with non-safety instrument air isolated

b. Findings

CR-12-00899 and CR-12-01645 are associated with URI 05000395/2012002-05, "Potentially Inadequate Test Criteria for Operability Testing of the Feedwater Isolation Valves," previously opened in NRC Integrated Inspection Report 05000395/2012002. No findings were identified relating to operability evaluations for the other CRs.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed one permanent modification, engineering change request (ECR) 50840, "Chemical Treatment of SW System," to evaluate the change for adverse effects on system availability, reliability, and functional capability. Documents reviewed included ECR implementation procedures, modification design and implementation packages, engineering calculations, WOs, site drawings, applicable sections of the FSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and FSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors also reviewed any related CRs to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

b. Findings

No findings were identified relating to implementation of the modification.

1R19 Post Maintenance Testinga. 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 1205210-002, perform 'A' SSPS testing following replacement of relay cards associated with 'C' reactor coolant pump (RCP) underfrequency bistable intermittent alarms
- WO 1201138-001, post maintenance testing of 'C' main steam supply valve for TDEFW following packing adjustment
- WO 111773-001, stroke and fail safe test 'B' EDG cooler fire service supply valve following regulator replacement
- WO 0912080-001, thermal overload bypass testing for RB spray pump 'A' refueling water storage tank (RWST) isolation valve following breaker replacement

Enclosure

- WO 1206921-004, replace SW pump 'C' lower bearing flow indicator
- WO 1116819-001, repair 'A' SW pump motor oil leak

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-220.001A, "Motor Driven Emergency Feedwater Pump and Valve Test," Rev. 9, Change A
- STP- 130.004E, "Main Feedwater Isolation Valve Operability Testing," Rev. 1
- STP-205.004, "RHR Pump and Valve Operability Test," Rev. 7

Containment Isolation Valve:

- STP-142.001, "Reactor Coolant System Valve Operability Test," Rev. 10

Other:

- STP-125.013B, "Diesel Generator B Semiannual Operability Test," Rev. 0
- STP-345.035, "First State Pressure Instrument Calibration," Rev. 10

b. Findings

No findings were identified.

1EP6 Drill Evaluation

a. Inspection Scope

On May 16, 2012, the inspectors reviewed and observed the performance of an emergency preparedness drill that involved a weather related loss of offsite power and subsequent reactor trip, a failure of an EDG fuel oil pump with subsequent loss of the EDG and with the opposite train EDG inoperable a loss of all AC power, and a contaminated personnel injury which required entry into increasing emergency action

Enclosure

levels starting with an Alert and ending in a General Emergency. The inspectors assessed abnormal and emergency procedure usage, emergency plan classifications, protective action recommendations, respective notifications and the adequacy of the licensee's drill critique. The inspectors verified that drill deficiencies were captured into the licensee's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Cornerstone: Reactor Safety Barrier Integrity

a. Inspection Scope

The inspectors verified the accuracy of the licensee's PI submittals listed below for the period April, 2011, through March, 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, 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.

- RCS Specific Activity
- RCS Identified Leak Rate

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

Enclosure

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 Semi-Annual Review to Identify Trends

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The review was focused on repetitive equipment issues, but also considered trends in human performance errors, the results of daily inspector corrective action item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The review nominally considered the six-month period of January, 2012, through June, 2012. Where appropriate, the review included previous months prior to 2012. Documents reviewed included licensee monthly and quarterly corrective action trend reports, engineering system health reports, maintenance rule documents, department self-assessment activities, and quality assurance audit reports.

b. Findings

No findings were identified. In general, the licensee has identified trends and has addressed the trends with their CAP. However, the inspectors noted an increased number of problems relating to the quality of engineering evaluations. Specifically, the inspectors identified the following CRs in which the licensee was unable to arrive at the correct conclusion in the initial revision of an engineering evaluation of a plant related problem:

CR-11-03323 was issued to document an inspector identified problem with chilled water piping that had not been adequately evaluated for flooding concerns. The licensee's evaluation concluded that the flooding would not adversely impact safety-related switchgear. However, the inspectors identified that the licensee failed to consider spray from the piping which would adversely impact the switchgear. This problem was documented as NCV 05000395/2012002-03, Failure to Analyze a Moderate Energy Fluid System for Leakage Cracks, in NRC IR 05000395/2012002.

CR-11-05578 and CR-11-05852 were issued to document inspector identified problems with fire hoses. The licensee initially concluded in respective operability evaluations for CR-11-5578 that the fire hoses were fully operable, and in CR-11-05852 that the fire hoses were operable with interim actions. However, in neither CR did the licensee initially conclude that the fire hoses were a nonconformance, i.e, not fully operable. The inspectors subsequently issued apparent violation, AV 05000395/2012002-07, which is closed to a Green NCV in Section 4OA5.2 of this report, that documents a failure of the hoses to meet Fire Protection Program requirements.

Enclosure

CR-11-03187 and CR-11-05225 documented safety-related chiller trips due to lightning. In both cases the licensee's initial evaluation concluded that the chillers were fully operable. The inspectors issued NCV 05000395/2012002-06 for a failure to promptly correct conditions adverse to quality involving inadequate design of the chillers relative to protection from lightning, i.e., the chillers were not fully operable because they could not meet their current licensing basis requirements.

CR-12-00899 was issued for inspector identified concerns with surveillance testing of feedwater isolation valves. The CR was closed to CR-12-2014 issued for URI 05000395/2012002-05 discussed earlier in this report. During the inspectors' ongoing review of licensee documents, the inspectors identified that post modification testing documentation for all three feedwater isolation valves from previous installation of new actuators for the feedwater isolation valves was missing from the associated work order packages. The licensee initiated CR-12-02418 to document this performance deficiency (PD). Because the licensee was able to locate some of the test information from personal engineering files, the inspectors concluded that this was a minor violation of 10 CRF 50, Appendix B, Criterion XVII, "Quality Assurance Records," which requires in part that sufficient records shall be maintained to furnish evidence of activities affecting quality.

CR-12-00771 was issued for an inspector identified problem with a SW pipe support, SWH-245, in which a gap existed between the pipe and the support. The licensee's initial evaluation was documented in engineering information request, EIR-81867, and concluded that the support was acceptable as is. However, the inspectors determined that the licensee did not perform an operability evaluation in accordance with procedure, ES-120, and did not characterize the condition as a nonconformance. This problem is currently identified as URI 05000395/2012002-04 which remains open.

The licensee initiated CR-12-01968 to document the aforementioned trend and perform an evaluation for any necessary corrective actions.

.3 Annual Sample Review

a. Inspection Scope

The inspectors reviewed CR-03-04103, valve XVC08716A-RH was found covered with tape and plastic residue, dated November 17, 2003, 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.

b. Findings

No findings were identified. During a cross-train walkdown of the 'A' RHR system, the inspectors observed melted herculite, a flexible PVC based 3-ply material used by health physics, and melted duct tape on RHR check valve, XVC08716A-RH, and on RHR flow element, FE-605A. The inspectors noted that a variety of industry operating experience has demonstrated that objects such as tape, insulating jackets, magic-markers, or other materials containing chlorides have the potential to cause stress corrosion cracking of stainless steel if the chlorides are allowed to migrate from the material onto the stainless steel surface and there are conditions inducing stress such as welds or elevated operating pressure.

The inspectors noted that the melted herculite issue had been previously evaluated in nonconformance notice (NCN) 5462, dated May 12, 1996, as noted in CR-03-04103. The inspectors reviewed NCN-5462 and also noted additional discussion in Technical Work Record 10438, dated July 11, 1991. The licensee's conclusion from their previous evaluations had been to accept the condition "as is" based on discussions with the herculite vendor, which indicated that the RHR piping temperature did not increase to a point resulting in the release chlorides from the herculite. Consequently, there were no corrective actions identified by CR-03-04103.

However, the inspectors noted that the tape identified in CR-03-04103 was not identified or discussed in NCN-5462 resulting in failure to evaluate a change in conditions with potential adverse affects on the aforementioned RHR components. Additionally, the inspectors discussed this issue with the herculite vendor who reported that a discoloration of the herculite could indicate that chlorides had been released. The inspectors did note a definitive color change in the melted herculite material. Moreover, the inspectors determined that no historical samples of the herculite or duct tape have been analyzed for chlorides, the melted material has not been removed from the RHR components, and, therefore, the affected RHR components or samples of the affected surface area have not been tested to ensure no adverse long term impact. Consequently, the licensee initiated CR-12-02152 to address the inspector's concerns regarding the potential long term impact on the affected RHR components. The inspectors will review CR-12-02152 once the licensee has completed their corrective actions.

The inspectors reviewed licensee documents for evidence of adequate programmatic control of materials containing chlorides to ensure no adverse impact on safety-related impacts. The inspectors determined that the licensee's procurement specifications ensure that purchased duct tape has a very low concentration of chlorides. The inspectors also noted that some procedures specify the use of duct tape and that others note the use of "approved duct tape". However, the inspectors concluded that vulnerability exists due to the lack of a specific administrative program for the use of materials containing chlorides in all aspects of plant operations and maintenance. The inspectors consulted with regional personnel and determined that in the absence of observed component problems, the failure to control the use of materials such as herculite and duct tape that contain chlorides which can adversely impact safety-related

Enclosure

stainless steel components is a minor violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," which states in part activities affecting quality shall be prescribed by documented instructions, procedures or drawings. The licensee will address the programmatic concerns in CR-12-02152.

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 (Closed) AV 05000395/2012002-07, Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose

Introduction: The inspectors had previously opened AV 05000395/2012002-07, Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose in NRC Integrated Inspection Report 05000395/2012002. A Green NCV of V.C. Summer's Nuclear Station Renewed Operating License NPF-12, 2.C(18), "Fire Protection System" was identified by the inspectors with two examples for the failure to comply with Fire Protection Program (FPP) requirements in which the licensee used unapproved fire hoses.

Description: On November 3, 2011, based on previous inspector identified fire hose issues including kinks and blemishes, the inspectors performed a focused inspection on non-collapsible fire hose. The inspectors noted that the licensee was using 1.5" Thermoid Mexacon General Purpose (GP) 250 PSI hose at a majority of the Fire Protection Evaluation Report (FPER) and non-FPER interior hose reel stations. The inspectors determined that HBD Thermoid's specification for the hose noted a minimum bend radius of 10.5", conflicting with the 5" radius of the respective hose reels. The HBD Thermoid hose was installed in 2008 at a majority of the FPER and non-FPER hose stations throughout the plant. The licensee initiated CR-11-05578 and performed an engineering evaluation to address this discrepancy.

On November 18, 2011, inspectors reviewed the engineering evaluation for the Thermoid hose, and noted that the evaluation failed to include other non-collapsible fire

Enclosure

hose as part of an extent of condition review. The inspector's extent of condition review identified that 1.5" Gates Duro Flex hose, installed in 2011, had a minimum bend radius of 12", but was installed on six reels with a 5" radius. The licensee then initiated CR 11-05852 to evaluate the Gates Duro Flex hose. The licensee also took compensatory actions including staging approved collapsible fire hose at the two affected FPER hose reels. On November 21, 2011, an engineering evaluation for the Gates Duro Flex hose determined that two FPER hoses and four non-FPER hoses were not compatible with the hose reels due to exceeding the minimum bend radius of the hose.

The inspectors noted that the operating license for V.C. Summer requires the licensee to implement their FPP as described in the FSAR of which Section 9.5.1.1 includes the FPER. Section C.1 of the FPER requires in part that technical and quality requirements will be developed for procurements. The inspectors also noted that approved, quality related procedure, Technical Requirements Package (TRP) No. 2, "Fire Protection," Rev. 8, states in part that during procurement, technical requirements shall be reviewed to assure application of the appropriate requirements and determine their acceptability. The inspectors determined that the minimum bend radius requirement for the hoses purchased in 2008 was not reviewed during procurement. The inspectors also determined that this was an example of the licensee's failure to comply with their FPP.

During the FPER review, inspectors identified a second example of the licensee's failure to follow their FPP involving the Gates and HBD Thermoid hose along with the original hose that was installed prior to 2008. Inspectors noted that FSAR Section 9.5.1.1 includes the FPER of which Section 5.E.3.(d) states in part that non-collapsible hose will meet the appropriate American Nuclear Insurers (ANI) specifications. Inspectors also noted ANI specification "Basic Fire Protection for Nuclear Plants," April 1976, which states that interior fire hose shall be "lined fire hose" and determined that the licensee was not in compliance.

In 1979, during construction procurement, the licensee's contractor specified 1.5" non-collapsible "Amce-Hamilton Vari-Purpose Air Hose Specification 23-5132 or equal" on the bill of material for use as fire hose. In 2008, the licensee revised Procurement Technical Requirement (PTR) ME-3N adding the following brand name for the hose manufacturer: "Thermoid Maxecon/GP." According to Thermoid's specifications sheet, GP stands for General Purpose and the hose is characterized as an air and water service hose. Further, inspectors noted that the 1.5" Gates Duro Flex hose was also multi-purpose hose. Inspectors determined that the Gates, HBD Thermoid and Acme-Hamilton hoses were not UL listed for fire protection use and were not lined fire hose.

After discovering that minimum bend radii had been exceeded and that lined fire hose was not being used, inspectors looked for recent hose failures and reviewed CR-11-01634 dated April 12, 2011, in which the licensee stated that there had been four failures of 1.5" non-collapsible rubber hose prior to May 2011. Two failures consisting of one FPER hose and one non-FPER hose were at normal operating pressure during non-emergency use. The other two failures were non-FPER hose failures during three-year hydrostatic testing. Further, at the time of these failures, the licensee had only hydrostatically tested six 1.5" non-collapsible hoses, from May 2011 until November

Enclosure

2011, no three-year hydrostatic tests were performed on the 1.5" non-collapsible hoses even though the hoses were purchased in 2008.

Based on the inspector's discovery of the use of unapproved fire hose, the licensee had replaced all non-collapsible rubber hose with approved, collapsible fire hose by December 10, 2011. The licensee is currently in the process of testing all 1.5" non-collapsible hoses that were removed in 2011. As of March 22, 2012, an additional 17 out of 25 non-collapsible hoses have failed the three-year hydrostatic test.

Analysis: The inspectors identified a PD with the two aforementioned examples in which the licensee failed to comply with FPP requirements regarding the use of approved fire hose. The PD is more than minor and therefore a finding because it impacts the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of protection against external factors such as fire. The inspectors reviewed IMC 0609, Appendix F, and determined that the finding was potentially of moderate safety significance because the non-collapsible rubber hose and portable extinguishers are the only local means of fire suppression for several fire zones, of which the most significant are the 7.2 kV safety-related switchgear rooms. The inspectors determined that because multiple fire areas were affected, a phase 3 SDP risk assessment was required.

The phase 3 SDP risk assessment was performed by a regional senior reactor analyst using the guidance of NRC IMC 0609 Appendix F and NUREG/CR 6850 Revs. 0 and 1. The licensee completed testing of all the non-collapsible hoses on hose reels and the results yielded 6 functional failures of the tested population of 53 hoses. Significant assumptions affecting the analysis included: (1) The exposure period was one year. (2) Only fires in areas which rely solely on manual suppression via fire hoses were considered to contribute to the risk of the PD; this included compartments in the intermediate building on the 412 foot elevation [IB-1, IB-2, IB-3, IB-4, IB-5, IB-6, IB-8, IB-9, IB23.1, IB-27] and the reactor building fire area. Fixed suppression would prevent and control fire growth such that a delay due to fire hose changeout would not affect fire damage and resultant fire risk contribution. (3) V.C. Summer is a Kerite plant therefore self ignited cable fires are not considered. (4) Ignition frequency data, target cable data and fire scenario initiator data from the licensee's National Fire Protection Association 805 transition effort were utilized. (5) Walkdowns performed by the resident inspector were used to determine the appropriate delay time to retrieve and install collapsible replacement hoses. (6) Fire drill data for the last two years was used to develop the probability that collapsible hoses are brought to the fire scene. (7) Severity Factor (SF) and Adjustment Factor (AF) of 1.0 was utilized.

The conditional core damage probability for the various fire scenarios was developed using the NRC's latest V.C. Summer Sapphire 8 SPAR model. The risk was mitigated by the fact that most of the failed hoses served areas which were equipped with fixed suppression and that the areas served by the failed hoses did not contain many fixed ignition sources. The result of the phase 3 analysis was that the performance deficiency resulted in an increase in core damage frequency of $<1E-6$ per year, a GREEN finding of very low safety significance. The cause of the finding involved the cross-cutting area of

Enclosure

human performance, the component of work practices, and the aspect of procedural compliance, H.4(b), because the licensee failed to follow FPP procedural and program requirements for proper fire hose selection and use.

Enforcement: V.C. Summer Nuclear Station Renewed Operating License NPF-12, 2.C(18) states, in part, that V.C. Summer Nuclear Station shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the FSAR for the facility. FSAR Section 9.5.1.1 includes the FPER of which Section 5.E.3.(d) states in part: that non-collapsible hose meet the appropriate ANI specifications and that technical and quality requirements will be developed for procurement, consistent with approved procurement procedures (FPER Section C.1). ANI specification entitled "Basic Fire Protection for Nuclear Power Plants," 1976 edition, requires in part that 1.5" lined fire hose be provided in all buildings. Contrary to the above, from the issuance date of their license to December 9, 2011, the licensee used air, general purpose and multi-purpose non-collapsible hose that was not classified or qualified as lined fire hose. TRP No. 2, "Fire Protection," Rev. 8 states in part that the technical requirements shall be reviewed to assure application of the appropriate requirements and determine their acceptability. Contrary to the above, on August 8, 2008, the licensee modified PTR ME-3N, "Hose Reel Fire Hose: 1-1/2" Non-Collapsible," choosing a hose with a minimum bend radius of 10.5" to be used on a reel with a 5" radius. Because the finding is of low significance (Green) and was entered into the licensee's corrective action program as condition reports CR-11-05578 and CR-11-05852, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000395/2012002-07, Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose.

4OA6 Meetings, Including Exit

On July 24, 2012, 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

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
R. Burt, Plant Support Engineering
M. Coleman, Manager, Health Physics and Safety Services
G. Douglass, Manager, Nuclear Protection Services
J. Garza, Nuclear Licensing
T. Gatlin, Vice President, Nuclear Operations
M. Harmon, Manager, Chemistry Services
R. Haselden, General Manager, Organizational / Development Effectiveness
R. Justice, Manager, Nuclear Operations
K. Leonelli, Design Engineering
G. Lippard, General Manager, Nuclear Plant Operations
M. Mosley, Manager, Nuclear Training
N. Smith, Operations Support
D. Shue, Manager, Maintenance Services
T. Stewart, Nuclear Licensing
W. Stuart, General Manager, Engineering Services
B. Sumner, Plant Support Engineering
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

05000395/2012002-07	NCV	Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose (Section 4OA5.2)
---------------------	-----	---

Closed

05000395/2012002-07	AV	Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose (Section 4OA5.2)
---------------------	----	---

Discussed

05000395/2012002-05	URI	Potentially Inadequate Test Criteria for Operability Testing of the Feedwater Isolation Valves (Section 1R15)
---------------------	-----	---

LIST OF DOCUMENTS REVIEWED

Section 1R01: Weather Protection

- AOP-301.1, Response to Electrical Grid Issues, Revision 0, Change D
- EOP-6.0, Loss of All ESF AC Power, Revision 25
- OAP-100.4, Communication, Revision 2, Change E
- OAP-102.1, Conduct of Operations Scheduling Unit, Revision 7, Change B
- SAP-703, Control of Switchyard/Transformer Yard Activities, Revision 1, Change F
- SAP-1166, NERC Reliability Standard Compliance Program, Revision 1
- SOP-301, Main Generator System, Revision 15, Change C
- SOP-304, 115KV/7.2KV Operations, Revision 12, Change F
- South Carolina Electric and Gas Company, Nuclear-Electric Transmission Interface Agreement, Revision 4, dated December 13, 2011
- Virgil C. Summer Nuclear Power Station, AAC Power Source Interface Agreement, dated August 8, 2008

Section 1R04: Equipment Alignment

- STP-223.004, XVB03107A(B)-SW Air Supply Check Valve Test, Revision 1, Change A
- Plant Modification, Addition of SW Vacuum Relief Valves and Replacement of XVG03107A/B-SW, dated August 15, 2011
- ECR 50567, SW Vacuum Relief Valves and Replacement of XVG03107A/B-SW, Change Q
- Drawing D-302-222, Sheet 2, A - Train Cooling to RBCU Loop, Revision 0
- Drawing D-302-222, Sheet 4, B - Train Cooling to RBCU Loop, Revision 0

Section 1R06: Flood Protection Measures

- Design calculation, DC03490-003, Revision 0, Intermediate & Diesel Generator Buildings Flooding Evaluation
- Design Basis Document (DB), ND, Drains, Sumps, and Leak Detection, Revision 2
- DBD, Service Water System, Revision
- Engineering Services procedure, ES-0425, Cumulative Effects Program, Revision 3
- ES-0437, Inspections for Maintenance Rule - Structures, Revision 1
- Engineering Design Guideline, ME-15, High Energy Line Break and Moderate Energy Crack Evaluations, Revision 3
- Technical Report, TR00010-006, Maintenance Rule Inspections - 2005, Revision 0
- TR00170-002, Structures Screening for License Renewal, Revision 1
- FSAR Section 3.4, Water Level (Flood) Design
- FSAR Section 18.2.16, Flood Barrier Inspection
- WO 1115104, PM on XPP0146B, DB sump pump B
- WO 1115103, PM on XPP0146A, DB sump pump A
- WO 0929070, Calibrate DB sump high level alarm switch
- WO 1116520-001, Inspect EMH001 for presence of water
- WO 1200245-001, Inspect EMH002 for leaks and perform repairs

- CR-11-06213, Water is leaking into the SW building from electrical manhole #2 cable penetrations.

Section 40A5.1: Other Activities

- TR07800-007, Revision 0, Fire Ignition Frequency Analysis
- CR-11-05578, NRC identified concern about exceeding the minimum bend radius of Thermoid Maxecon/GP hose being used as fire hose
- CR-11-05852, NRC identified concern about exceeding the minimum bend radius of Gates Duro Flex hose being used as fire hose
- STP-728.015, "Fire hose Stations Valve Flow Check, Hose Hydrostatic Pressure Test and Visual Inspection," Revision 4B
- TRP No. 2, "Fire Protection," Revision 8D
- ANI specification, "Basic Fire Protection for Nuclear Plants," April, 1976

LIST OF ACRONYMS

AB	Auxiliary Building
AC	Alternating Current
ADAMS	Agency Document Access and Management System
ANI	American Nuclear Insurer
AV	Apparent Violation
CAP	Corrective Action Program
CB	Control Building
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Mechanism
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EMH	Electrical Manhole
ES	Engineering Services Procedure
FPER	Fire Protection Evaluation Report
FPP	Fire Protection Program
FSAR	Final Safety Analysis Report
GP	General Purpose
GPM	Gallons Per Minute
GTP	General Test Procedure
HVAC	Heating, Ventilation, and Air Conditioning
IB	Intermediate Building
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IR	Inspection Report
kV	Kilovolt
LER	Licensee Event Report
MDEFW	Motor Driven Emergency Feedwater
MR	Maintenance Rule
NCN	Nonconformance
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
PTR	Procurement Technical Requirement
RB	Reactor Building

RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
REV	Revision
RF	Refueling
RHR	Residual Heat Removal
RWST	Refueling Water Storage Tank
SAP	Station Administrative Procedure
SCE&G	South Carolina Electric and Gas
SDP	Significance Determination Process
SOP	System Operating Procedure
SSC	System, Structures, and Components
SSPS	Solid State Protection System
STP	Surveillance Test Procedure
SW	Service Water
TDEFW	Turbine Driven Emergency Feedwater
TRP	Technical Requirements Package
TS	Technical Specification
UL	Underwriters Laboratories, Inc.
VCSNS	V.C. Summer Nuclear Station
WANO	World Association of Nuclear Operators
WO	Work Order