UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 27, 2009

Mr. Jeffrey B. Archie
Vice President
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 05000395/2008005 AND NRC EMERGENCY PREPAREDNESS INSPECTION REPORT 05000395/2008501

Dear Mr. Archie:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station. The enclosed integrated inspection report documents the inspection results, which were discussed on January 13, 2009, with you and other members of your staff. In addition, on October 31, 2008, the NRC completed an Emergency Preparedness inspection at your Virgil C. Summer Nuclear Station. The enclosed inspection report documents the inspection results, which were discussed on October 31, 2008, 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. Based on the results of this inspection, no findings of significance were identified.

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 document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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 05000395/2008005 and NRC Inspection Report No. 05000395/2008501 w/Attachment: Supplemental Information

cc w/encl: (See next page)

January 27, 2009

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Letter to Jeffrey B. Archie from Gerald J. McCoy, dated January 27, 2009

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000395/2008005 AND NRC EMERGENCY PREPAREDNESS INSPECTION REPORT 05000395/2008501

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-395

License No.: NPF-12

Report No.: 05000395/2008005 and 05000395/2008501

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

Facility: Virgil C. Summer Nuclear Station

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

Dates: October 1, 2008 through December 31, 2008

Inspectors: J. Zeiler, Senior Resident Inspector
J. Policikoski, Acting Senior Resident Inspector
K. Ellis, Acting Resident Inspector
E. Lea, Senior Operations Engineer (Section 1R11)
L. Miller, Senior Emergency Preparedness Inspector (Sections 1EP2, 1EP3, 1EP4, 1EP5, 4OA1.2, and 4OA5.3)

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

Enclosure

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SUMMARY OF FINDINGS

IR 05000395/2008-005; IR 05000395/2008-501; 10/01/2008 - 12/31/2008; Virgil C. Summer Nuclear Station; Routine Integrated Inspection Report; and, Exercise and Baseline Inspection.

The report covered a three-month period of inspection by resident inspectors and an announced inspection by one emergency preparedness inspector. No findings of significance were identified by the NRC. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). 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

Summary of Plant Status

The unit began the inspection period at full rated thermal power (RTP). The unit operated at or near RTP for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Seasonal Weather Susceptibilities

a. Inspection Scope

The inspectors performed one adverse weather inspection for readiness of cold weather. The inspectors verified the licensee had implemented applicable sections of operations administrative procedure (OAP)-109.1, Revision 2D, "Guidelines for Severe Weather." The inspectors walked down the condensate storage tank and refueling water storage tank level instrumentation and selected freeze protection alarm panels to assess whether the equipment was adequately protected from cold weather and was functioning as expected. Also, the inspectors reviewed the licensee's corrective action program (CAP) database to verify that freeze protection problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved.

b. Findings

No findings of significance were identified.

.2 Actual Adverse Weather Conditions

a. Inspection Scope

The inspectors performed an impending adverse weather inspection to review the licensee's overall preparations and protection of employees and risk-significant systems in response to a tornado watch/warning declared in Fairfield County on December 11, 2008. The inspectors verified the licensee had implemented applicable sections of OAP-109.1, Revision 2D, "Guidelines for Severe Weather," and emergency planning procedure (EPP)-015, Revision 16, "Natural Emergency." The inspectors responded to the control room during the tornado warning and monitored licensee response actions and weather report updates until the adverse weather conditions were over.

b. Findings

No findings of significance were identified.

.3 External Flooding

a. Inspection Scope

The inspectors reviewed the licensee's external flood mitigation plans to determine consistency with design requirements, final safety analysis report (FSAR) Sections 2.4.2 through 2.4.10, flood analysis documents, and EPP-015, Revision 16, "Natural Emergency." The inspectors performed walkdowns of the station to verify flood protection features remained as described in the FSAR. Specifically, the inspectors performed visual examinations of the storm drain system inside the protected area to verify that drains were not blocked and the ground was properly graded to channel water into the system. The inspectors also conducted walkdowns of the rooftop drainage systems of the auxiliary, control, turbine, and fuel handling buildings, to verify proper drainage capability immediately following a rainstorm.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three partial equipment alignment walkdowns 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 (SOPs), FSAR, and technical specifications (TS). The inspections included review of outstanding maintenance work orders (WOs) and related condition reports (CRs) to verify that the licensee had properly identified and resolved equipment alignment problems that could lead to the initiation of an event or impact mitigating system availability. Documents reviewed are listed in the attachment.

- "A" centrifugal charging pump (CCP) system, while "B" CCP was OOS during scheduled maintenance
- "A" and "B" motor driven emergency feedwater (MDEFW) system, while the turbine driven emergency feedwater (TDEFW) pump was OOS during scheduled maintenance
- "A" residual heat removal (RHR) system, while the "B" RHR pump was OOS during scheduled maintenance

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a detailed review and walkdown of the emergency feedwater system and related piping to identify any discrepancies between the current operating system equipment lineup and the designed lineup. This walkdown included accessible areas outside the reactor building. In addition, the inspectors reviewed completed surveillance procedures, outstanding WOs, system health reports, and related CRs to verify that the licensee had properly identified and resolved equipment problems that could affect the availability and operability of the system. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly 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 three areas (respective fire zones also noted):

- Service water pump house (SWPH) (fire zones SWPH-1, 3, 4, 5.1 and 5.2)
- CCP rooms “A,” “B” and “C” (fire zones AB-1.5, 1.6 and 1.7)
- Auxiliary building (AB) 397’ and 388’ elevation (fire zone AB-1.4)

b. Findings

No findings of significance were identified.

.2 Annual Fire Brigade Drill Observation

a. Inspection Scope

The inspectors observed the performance of the licensee’s fire drills on August 13, September 10, November 8, and December 4, 2008. The inspectors evaluated the readiness of licensee personnel to prevent and fight fires including the following aspects:

- Observe whether turnout clothing and self-contained breathing apparatus (SCBA) equipment were properly worn
- Determine whether fire hose lines were properly laid out and nozzle pattern simulated being tested prior to entering the fire area of concern

- Verify that the fire area was entered in a controlled manner
- Review if sufficient firefighting equipment was brought to the scene by the fire brigade to properly perform their firefighting duties
- Verify that the fire brigade leader's fire fighting directions were thorough, clear and effective, and that, if necessary, offsite fire team assistance was requested
- Verify that radio communications with plant operators and between fire brigade members were efficient and effective
- Confirm that fire brigade members checked for fire victims and fire propagation into applicable plant areas
- Observe if effective smoke removal operations were simulated
- Verify that the fire fighting pre-plans were properly utilized and were effective
- Verify that the licensee pre-planned drill scenario was followed, drill objectives met the acceptance criteria, and deficiencies were captured in post drill critiques

b. Findings

No findings of significance were identified; however, a continued adverse trend of minor fire brigade drill performance and critique discrepancies was identified in Section 4OA2.2 of this report.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed and walked down one area (the service water pumphouse) regarding internal flood protection features and equipment to determine consistency with design requirements, FSAR, and flood analysis documents. Risk significant structures, systems, and components (SSCs) in these areas included the service water pump and related electrical switchgear. The inspectors reviewed the licensee's CAP database to verify that internal flood protection problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Annual Review of Licensee Requalification Examination Results

a. Inspection Scope

On August 27, 2008, the licensee completed administering the annual requalification operating tests which are required to be given to all licensed operators in accordance with 10 CFR 55.59(a) (2). The inspectors performed an in-office review of the overall pass/fail results of the individual operating tests, as well as the crew simulator operating tests.
These results were compared to the thresholds established in Manual Chapter 0609 Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings of significance were identified.

.2 Resident Inspector Quarterly Review

a. Inspection Scope

On November 12, 2008, the inspectors observed performance of senior reactor operator and reactor operators on the plant simulator during an emergency preparedness drill. The drill scenario (EPD-07-01B) involved an earthquake followed by reactor vessel fuel failure, a loss of coolant accident, and subsequent failure of containment integrity. The inspectors assessed overall crew performance, communications, oversight of supervision, and the evaluators' critique. The inspectors verified that any significant training issues were appropriately captured in the licensee's CAP.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors evaluated three equipment issues described in the CRs listed below to verify the licensee's effectiveness with the corresponding preventive or corrective maintenance associated with SSCs. The inspectors reviewed maintenance rule (MR) implementation to verify that component and equipment failures were identified, entered, and scoped within the MR program. Selected SSCs were reviewed to verify proper categorization and classification in accordance with 10 CFR 50.65. The inspectors examined the licensee's 10 CFR 50.65 (a)(1) corrective action plans to determine if the licensee was identifying issues related to the MR at an appropriate threshold and that corrective actions were established and effective. The inspectors' review also evaluated if maintenance preventable functional failures or other MR findings existed that the licensee had not identified.

The inspectors reviewed the licensee's controlling procedures, i.e., engineering services procedure (ES)-514, Revision 4, "Maintenance Rule Implementation," and the Virgil C. Summer "Important To Maintenance Rule System Function and Performance Criteria Analysis," to verify consistency with the MR requirements.

- CR-08-00944 and CR-08-00972, control room outside air intake flow over 1000 standard cubic feet per minute (SCFM) and pressure less than 1/8 inch water gauge during surveillance testing
- CR-08-01479, "B" emergency diesel generator (EDG) annunciator alarms received during testing
- CR-05-00573, "B" EDG local annunciator power supply failure and related bus noise anomalies

b. Findings

No findings of significance were identified; however, the inspectors identified a concern with regard to the licensee's maintenance rule evaluation for CR-08-00944. The Root Cause Evaluation (RCA-08-00944) stated that the failure of surveillance test procedure (STP)-454.002, Revision 5A, "Control Room Emergency Air Cleanup System Performance Test," was a maintenance preventable functional failure (MPFF) of only the "A" train of Control Room Normal and Emergency Air Handling System (control room ventilation) due to test results that proved that "A" train was incapable of meeting the TS criteria limits of ≤ 1000 SCFM for outside air flow and ≥ 0.125 inches of water for the control room envelope differential pressure (DP). The past operability review of this event (Action #4, CR-08-00944) and the related Licensee Event Report (LER) 05000395/2008002-01, "Control Room Normal and Emergency Air Handling Systems Inoperable Due to Pressure Boundary Breach," stated that the involved failure of the control room pressure boundary (CRPB) would have also adversely impacted the "B" train of control room ventilation performance, possibly resulting in exceeding the TS outside air flow and DP criteria limits. However, the licensee failed to address in its maintenance rule evaluation their rationale for not considering the failure for "B" train control room ventilation.

The inspectors identified an unresolved item (URI) to determine whether the MPFF attributed solely to the "A" train of control room ventilation was also applicable to the "B" train of control room ventilation and whether maintenance rule program actions were required in accordance with 10 CFR 50.65(a)(2). This item will remain unresolved pending NRC review and inspection of the licensee's maintenance rule re-evaluation of this issue. The licensee documented this issue in CR-09-00107. This URI is identified as 05000395/2008005-01: Review Licensee Maintenance Rule Re-Evaluation of Control Room Pressure Boundary Breach.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the four 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 2008-44: risk assessment for scheduled maintenance and/or testing on the diesel-driven fire service pump and related valves, "C" service water (SW) pump (yellow risk), "A" turbine closed cycle cooling pump, and "A" MDEFW pump
- Work Week 2008-45: risk assessment for scheduled maintenance and/or testing on the reactor makeup system check valve replacement, "B" CCP pump, switchyard work activities, and emergent "A" heating ventilation and air-conditioning (HVAC) chiller air leak repairs
- Work Week 2008-49: risk assessment for scheduled maintenance and/or testing on the TDEFW pump (yellow risk) and "B" instrument/station air compressor

- Work Week 2008-50: risk assessment for scheduled maintenance and/or testing on the "C" CCP, "B" RHR pump (yellow risk) and associated room cooling system, and calibration of reactor building pressurizer pressure transmitter IPT000457

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two operability evaluations 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 station administrative procedure (SAP)-209, Revision 0D, "Operability Determination Process," and SAP-999, Revision 3A, "Corrective Action Program."

- CR-08-04636, voids found in RHR system piping during surveillance testing
- CR-08-05108, vital battery XBA1B post seal corrosion identified on several cells

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the six maintenance activities listed below, the inspectors reviewed the associated post-maintenance testing (PMT) procedures and either witnessed the testing and/or reviewed test records to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) test acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and, (8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with general test procedure (GTP)-214, Revision 4G, "Post Maintenance Testing Guideline."

- WOs 0613112, 0806319, 0807575, and 0809178, PMT for “C” SW pump and related valve preventive maintenance
- WOs 0806644 and 0806645, PMT for reactor makeup check valve replacement
- WOs 0802273, 0806020, 0808554, and 0808930, PMT for TDEFW semiannual preventive maintenance
- WO 0803662, PMT for “B” RHR pump motor breaker preventive maintenance
- WO 0817155, PMT for “A” SW pump motor upper oil bearing leak repair
- WOs 0810246, 0806141, 0810049, and 0810057, PMT for “B” EDG quarterly preventive maintenance

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed the three STPs listed below to verify that TS 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-212.002, Revision 6, “Reactor Building Spray Pump Test” (for “B” pump)

Other Surveillance Tests:
- STP-112.011, Revision 0, “Spray Pump Suction Piping Void Removal Verification” (for suction valve XVT13021-SP)
- STP-205.004, Revision 6, “RHR Pump and Valve Operability Test” (for “B” pump)

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing

a. Inspection Scope

The inspector evaluated the adequacy of the licensee's methods for testing the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, "Alert and Notification System Evaluation". The applicable planning standard 10 CFR Part 50.47(b)(5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, were also used as a reference.

The inspector reviewed various documents which are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation

a. Inspection Scope

The inspector reviewed the licensee's Emergency Response Organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection were reviewed to assess the effectiveness of corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization Staffing and Augmentation System." The applicable planning standard, 10 CFR 50.47(b)(2) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspector reviewed various documents which are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, Revisions 55 and 56 of the Virgil C. Summer Nuclear Station Emergency Plan were implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspector conducted a sampling review of the Plan changes and implementing procedure changes made between October 1, 2007 and June 30, 2008 to evaluate for potential decreases in effectiveness of the Plan. However, this review was not documented in a Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standard (PS), 10 CFR 50.47(b)(4) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspector reviewed various documents which are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspector reviewed the corrective actions identified through the Emergency Preparedness program to determine the significance of the issues and to determine if repeat problems were occurring. The facility's self-assessments and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. In addition, the inspector reviewed licensee's self-assessments and audits to assess the completeness and effectiveness of all emergency preparedness related corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Correction of Emergency Preparedness Weaknesses." The applicable planning standard, 10 CFR 50.47(b)(14) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspector reviewed various documents which are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the correction of emergency preparedness weaknesses on a biennial basis.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

On November 12, 2008, the inspectors reviewed and observed the performance of an emergency planning drill that involved a simulated earthquake followed by reactor vessel fuel failure, a loss-of-coolant accident inside the reactor building, followed by a failure of containment integrity (EPD-07-01B, "V.C. Summer Nuclear Station "D" ERO Training Drill"). The inspectors assessed the emergency procedure usage, emergency plan classifications, notifications, and protective action recommendation development. The inspectors evaluated the adequacy of the licensee's conduct of the drill and critique performance. The inspectors attended the drill critique to ensure that any drill performance weaknesses were entered into the licensee's CAP.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors verified the accuracy of the licensee's PI submittals listed below for the period October 1, 2007 through September 30, 2008. The inspectors used the performance indicator definitions and guidance contained in Nuclear Energy Institute 99-02, Revision 5, "Regulatory Assessment Performance Indicator Guideline," the licensee procedure SAP-1360, Revision 1, "NRC and INPO/WANO Performance Indicators," and the licensee's "NRC Mitigating Systems Performance Index (MSPI) Basis Document, Virgil C. Summer Nuclear Station, Revision 2" to check the reporting for each data element. The inspectors sampled LERs, operator logs, plant status reports, CRs, and performance indicator data sheets to verify that the licensee had identified the cumulative safety system unavailability and required hours, as applicable. The inspectors discussed the PI data with licensee personnel associated with performance indicator data collection and evaluation.

- MSPI - Emergency Feedwater System
- MSPI - Cooling Water Systems
- Safety System Functional Failures

b. Findings

No findings of significance were identified.

.2 Cornerstone: Emergency Preparedness

a. Inspection Scope

The inspector sampled licensee submittals for three Performance Indicators (PI) listed below. For each of the submittals reviewed, the inspector reviewed the period from July 1, 2007 through June 30, 2008. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the basis in reporting for each data element.

- Emergency Response Organization Drill/Exercise Performance (DEP)
- Emergency Response Organization Readiness (ERO)
- Alert and Notification System Reliability (ANS)

The inspectors reviewed portions of the raw PI data developed from monthly performance indicator reports and discussed the methods for compiling and reporting the PIs with cognizant emergency preparedness personnel. The inspector also independently screened drill and exercise opportunity evaluations, drill participation reports, and drill evaluations. Selected reported values were calculated to verify their accuracy. The inspectors compared graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. Reviewed documents are listed in the Attachment to this report.

b. Findings

No findings of significance 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 corrective action program. This review was accomplished by either attending daily screening meetings that briefly discussed major CRs, or accessing the licensee's computerized corrective action database and reviewing each CR that was initiated.

b. Assessment and Observations

No findings of significance were identified.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program 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 July 2008 through December 2008.
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. Assessment and Observations

New Trends

No new trends were identified this period that had not already been identified by the licensee.

Update of Previously Identified Trends

The inspectors previously identified an adverse trend associated with numerous minor fire brigade drill performance and drill critique issues that were not being identified by the licensee during the conduct of quarterly fire drills. During this six month trend review period, additional fire brigade drill performance and licensee drill critique deficiencies were noted by the inspectors.

.3 Annual Sample Reviews

1) Quarterly Sample Review

a. Inspection Scope

The inspectors reviewed the two issues listed below in detail to evaluate the effectiveness of the licensee's corrective actions for important safety issues.

- CR-08-02626, Post-maintenance retest/surveillance test not completed as required on "A" train SW to reactor building cooling units
- CR-05-00573, CR-05-02728, and CR-08-01479, EDG annunciator alarm panel power supply failures and bus related noise

The inspectors assessed whether the issues were 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 corrective actions. Also, the inspectors verified the issues were processed in accordance with procedure SAP-999, Revision 3A, "Corrective Action Program."

b. Findings and Observations

The inspectors identified two minor problems and areas for improvement as listed below with the licensee's documentation and implementation of corrective action associated with the EDG annunciator alarm panel power supply failure and bus related noise issues.

- The original and revised Root Cause Evaluation (RCA 05-0573) of CR-05-00573 specified that a preventive maintenance program would be implemented to monitor the EDG direct current bus voltage for noise every six months to assure timely identification of degradation in non-safety related EDG annunciator power supplies due to known capacitor reliability problems. However, the inspectors identified that a change was made to this preventive maintenance frequency on September, 17, 2007, reducing the frequency to every 2 years. Based on review of the frequency change documentation and discussions with licensee engineering and maintenance personnel, this change was made in error, without recognizing that it was related to a commitment from the RCA. The licensee initiated CR-09-00126 to address this problem.

- Action #2 of CR-08-01479 dealt with replacing the existing EDG annunciator power supplies with those made by a more reliable manufacturer. As allowed by the licensee's CAP procedure, this action item was closed out by opening WOs for scheduling the power supply replacements. However, the inspectors noted that the WOs initiated (i.e., WO 0816377 and WO 0816378) did not link the CR action item to ensure there was recognition that the work was associated with a CR commitment that had not yet been completed. The licensee revised the WOs to address this problem.

2) Annual Operator Work Around Review

a. Inspection Scope

The inspectors reviewed the licensee's list of identified operator workarounds, burdens, and challenges associated with mitigating system equipment to determine whether any new items since the previous review conducted in 2007 would adversely affect any mitigating system function or affect the operator's ability to implement abnormal or emergency operating procedures. In addition, the inspectors performed an independent review of outstanding control board WOs and known problems with mitigating system equipment to identify any potential workarounds that had not been formally identified and evaluated by the licensee.

b. Findings and Observations

No risk significant operator workarounds were identified as result of this review. However, the inspectors identified that the licensee was not implementing aspects of their operator workaround program as required by OAP-113.1, Revision 2B, "Operator Work around and Dark Board Program." For example, monthly Workaround/Challenge status boards had not been updated since October 2007 and the operations department website, that maintained the Workaround monthly status summary, had not been updated for the past several months. The licensee initiated CR-09-00143 to address this problem.

4OA3 Event Followup

.1 (Closed) LER 05000395/2008001-01: Manual Reactor Trip Due to Low Steam Generator Level Caused by Feedwater Flow Control Valve Malfunction.

The inspectors reviewed the subject LER associated with the issue to verify the LER accuracy and appropriateness of the specified corrective actions. The supplement to this LER provided additional details of the licensee's root cause evaluation and associated corrective actions. The untimely corrective actions to resolve feedwater regulating valve malfunctions that resulted in a reactor trip was the subject of self-revealing NRC Finding (FIN) 05000395/2008003-01. No new findings of significance were identified. This LER is closed.

.2 (Closed) LER 05000395/2008002-00: Control Room Normal and Emergency Air Handling Systems Inoperable Due to Pressure Boundary Breach.

The inspectors reviewed the subject LER associated with the issue to verify the LER accuracy and appropriateness of the specified corrective actions. The failure to maintain the control room pressure boundary operable and adhere to the limiting condition for operation (LCO) requirement of TS 3.7.6 was the subject of NRC identified non-cited violation (NCV) 05000395/2008004-02. No new findings of significance were identified. This LER is closed.

.3 (Closed) LER 05000395/2008003-00: Inadvertent Actuation of the Emergency Diesel Generator in the Emergency Start Mode Due to Bus Under voltage.
The inspectors reviewed the subject LER and applicable condition report (CR-08-02247) associated with the issue to verify the LER accuracy and appropriateness of the specified corrective actions. No new findings of significance were identified. This LER is closed.

.4 (Closed) LER 05000395/2008004-00: Technical Specification Violation Due to Alternate AC Inoperability.

The inspectors reviewed the subject LER and applicable condition reports (CR-08-02381 and CR-08-02477) associated with the issue to verify the LER accuracy and appropriateness of the specified corrective actions. The failure to conduct proper post modification testing for installing the underground tie line from the Parr Hydro generating station to V.C. Summer resulting in the non-compliance with the LCO of TS 3.8.1.1.b.4 was the subject of NRC identified NCV 05000395/2008007-02. No new findings of significance were identified. This LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Discussed) NRC Temporary Instruction (TI) 2515/176, Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

The objective of this TI was to gather information to assess the adequacy of nuclear power plant EDG endurance and margin testing as prescribed by plant-specific TS. The inspectors interfaced with the appropriate station staff to obtain the information specified in Attachment 1 of the TI Worksheet. The TI applies to all operating nuclear power reactor licensees that use EDGs as the onsite standby power supply. The inspectors verified the accuracy of the information by review of TS, EDG Design Basis Event loading calculations, EDG endurance run test procedures, test data from previous endurance tests performed on each EDG, EDG ratings, EDG logic diagrams, EDG vendor manual, and EDG operating history. The information gathered will by forwarded to Nuclear Reactor Regulation/Division of Engineering/Electrical Engineering Branch (NRR/DE/EEEB) for further review to assess the adequacy and consistency of EDG testing at nuclear stations.

b. Findings

The TI is presently scheduled to be open until August 31, 2009, pending completion of the NRR/DE/EEEB review.

.3 (Closed) NRC TI 2525/175, Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review

The inspector completed TI 2515/175, Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review. Appropriate documentation of the results was provided to NRC, HQ, as required by the TI. This completes the Region II inspection requirements for this TI for Virgil C. Summer Nuclear Station.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The inspectors presented the integrated inspection results to Mr. Jeffrey Archie and other members of the licensee staff on January 13, 2009. The emergency preparedness inspector presented the inspection resulted to Mr. Jeffrey Archie and other members of the licensee staff on October 31, 2008. 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

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Archie, Vice President, Nuclear Operations
L. Bennett, Manager, Plant Support Engineering
L. Blue, Manager, Nuclear Training
M. Browne, Manager, Quality Systems
A. Cribb, Supervisor, Nuclear Licensing
G. Douglass, Manager, Nuclear Protection Services
M. Fowlkes, General Manager, Engineering Services
D. Gatlin, General Manager, Nuclear Plant Operations
R. Justice, Manager, Maintenance Services
D. Lavigne, General Manager, Organizational / Development Effectiveness
G. Lippard, Manager, Operations
M. Mosley, Manager, Chemistry Services
P. Mothena, Manager, Health Physics and Safety Services
J. Nesbitt, Manager, Materials and Procurement
D. Shue, Manager, Planning / Outage
W. Stuart, Manager, Design Engineering
B. Thompson, Manager, Nuclear Licensing
R. Williamson, Supervisor, Emergency Services
S. Zarandi, General Manager, Nuclear Support Services

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000395/2008005-01	URI	Review Licensee Maintenance Rule Re-Evaluation of Control Room Pressure Boundary Breach (Section 1R12)

Closed

05000395/2008001-01	LER	Manual Reactor Trip Due to Low Steam Generator Level Caused by Feedwater Flow Control Valve Malfunction (Section 4OA3.1)
05000395/2008002-00	LER	Control Room Normal and Emergency Air Handling Systems Inoperable Due to Pressure Boundary Breach (Section 4OA3.2)
05000395/2008003-00	LER	Inadvertent Actuation of the Emergency Diesel Generator in the Emergency Start Mode Due to Bus Undervoltage (Section 4OA3.3)
05000395/2008004-00	LER	Technical Specification Violation Due to Alternate AC Inoperability (Section 4OA3.4)

05000395/2515/175	TI	Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review (Section 4OA5.3)

Discussed

05000395/2515/176	TI	Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedures and Drawings

SOP-102, Chemical and Volume Control System, Revision 22F
SOP-211, Emergency Feedwater System, Revision 13A
SOP-115, Residual Heat Removal, Revision 20B
E-302-675, Chemical and Volume Control System drawing, Revision 25
E-302-691, Safety Injection System drawing, Revision 13
D-302-085, Emergency Feedwater System Flow Diagram, Revision 41
List of open CRs and WOs for Emergency Feedwater System
FSAR Sections and Design Basis Document for Emergency Feedwater System

1EP2 Alert and Notification System Testing

Procedures and Documentation

EMP-170.003, Warning Siren Maintenance, Rev. 11
255360D, Model DCFCTB Federal Signal Corporation Technical Manual 2001 Siren Control, 10/2003
SS2000D, SS2000D Controller/Encoder Technical Manual, 10/2003
EPP-021, Activation of the Early Warning Siren System (EWSS), Rev. 19

Records and Data

PMTSR3 packages EWSS Silent tests Per EPP-104, August 7, 2006 – October 13, 2008
ESU Equipment Status Sheets, August 7, 2006 – October 13, 2008, 2008
EWSS Annual PM and Growl Test Data sheets multiple sirens for 2007 and 2008

1EP3 Emergency Response Organization Augmentation

Procedures

EPP-002, Communication and Notification, Rev. 34
EPP-023, Technical Support Center, Rev. 16
EPP-028, Operations Support Center, Rev. 0
EPP-051, Emergency Operations Facility, Rev. 7
EPP-102, Emergency Plan Training, Rev. 5
EPP-104, Verification of Communications Operability, Rev. 9

Records and Data

Final Report for August 26, 2008 After Hours Beeper Drill
Training Records for multiple personnel were reviewed.

1EP4 Emergency Action Level and Emergency Plan Changes
EP-100, Radiation Emergency Plan, Rev. 56
NTM-30.12, Simulator Training and Evaluation, Rev. 0

Plans and Changes packages
EP-100, Radiation Emergency Plan, Rev. 55 and 56
EPP-027, Hostile Action, Rev. 2
EPP-023, Technical Support Center, Rev. 16
EPP-105, Conduct of Drills and Exercises, Rev. 7
SAP-0127, Emergency Preparedness, Rev. 1 Change letter A

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies
Procedures
SAP-999, Corrective Action Program, Rev. 3
EPP-105, Conduct of Drills and Exercises, Rev. 7

Audits and Self-Assessments
QA-AUD-200605-0, Station Emergency Plan, March 1, 2006
QA-AUD-200703-0, Station Emergency Plan, March 12 - May 3, 2007
QA-AUD-200806-0, Station Emergency Plan, March 10 – June 25, 2008
SA06-NP-03, Drill and Exercise Program August 14 – September 25, 2006
SA07-EP-01, Emergency Plan Training, August 13 – September 4, 2007

Records and Data
KLD TR-411, Development of Evacuation Time Estimates, August 2007
EPP-04-01A, “A” Team Training Drill, March 14, 2007
EPP-06-01A, “D” Team Training Drill, April 18, 2007
EPP-05-01, “B” Team Training Drill, July 11, 2007
EPP-05-01A, “B” Team Remedial Drill, July 26, 2007
EPP-08-02A, “C” Team Training Drill, July 8, 2008

Corrective Actions – Condition Report (CR)
CR-06-03052
CR-06-03053
CR-06-03054
CR-06-03896
CR-06-04346
CR-07-00130
CR-07-00477
CR-07-00871
CR-07-00964
CR-07-00966
CR-07-00967
CR-07-01372
CR-07-01237
CR-07-01373
CR-07-01391
CR-07-01392
CR-08-01396

4OA1 Performance Indicator Verification

Procedures

EPP-106, Emergency Preparedness Performance Indicator Procedure, Rev. 1

Records and Data

ANS data from 3rd Qtr 2007 to 2nd Qtr 2008
DEP data from 3rd Qtr 2007 to 2nd Qtr 2008
ERO data from 3rd Qtr 2007 to 2nd Qtr 2008

Condition Reports Initiated for NRC Identified Issues

CR-08-04257, EDG testing concerns identified from TI2515/176 review
CR-08-04403, Shift supervisor unaware of new testing requirements for control room ventilation
CR-08-04417, Interim root cause actions not considered for future fan XAH0048 work
CR-08-04607, Service water pump "A" motor found with oil in motor exhaust filter box
CR-08-04702, Crack found in wall of centrifugal charging pump room "A"
CR-08-05056, Incorrect EOOS entry for AMSAC work activities
CR-08-05155, GTP-214 weaknesses for TDEFW post maintenance requirements
CR-08-05189, Environmental container in protected area found with crack in housing top
CR-09-00107, Maintenance Rule re-evaluation of Control room ventilation failure

LIST OF ACRONYMS

AB	Auxiliary Building
ADAMS	Agency Document Access and Management System
ANS	Alert and Notification System (ANS) Testing
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CCP	Centrifugal charging pump
CR	Condition Report
CRPB	Control Room Pressure Boundary
DEP	Emergency Response Organization Drill/Exercise Performance
DP	Differential Pressure
EDG	Emergency Diesel Generator
EPP	Emergency Plan Procedure
ERO	Emergency Response Organization
ES	Engineering Services Procedure
FIN	Finding
FSAR	Final Safety Analysis Report
GTP	General Test Procedure
HVAC	Heating, Ventilation, and Air Conditioning
LCO	Limiting Condition of Operation
LER	Licensee Event Report
MDEFW	Motor Driven Emergency Feedwater Pump
MPFF	Maintenance Preventable Functional Failure
MR	Maintenance Rule
MSPI	Mitigating Systems Performance Index
NEI	Nuclear Energy Institute
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OAP	Operations Administrative Procedure
OOS	Out of Service
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Testing
PS	Planning Standard
RHR	Residual Heat Removal
RTP	Rated Thermal Power
SAP	Station Administrative Procedure
SCE&G	South Carolina Electric and Gas
SCBA	Self-Contained Breathing Apparatus
SCFM	Standard Cubic Feet per Minute
SDP	Significance Determination Process
SOP	System Operating Procedure
SSC	Structures, Systems, or Components
STP	Surveillance Test Procedure
SW	Service Water
SWPH	Service Water Pump House

TDEFW	Turbine Driven Emergency Feedwater Pump
TI	Temporary Instruction
TS	Technical Specification
URI	Unresolved Item
WO	Work Order