



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

October 18, 2004

South Carolina Electric & Gas Company  
ATTN: Mr. Jeffrey B. Archie  
Vice President, Nuclear Operations  
Virgil C. Summer Nuclear Station  
P. O. Box 88  
Jenkinsville, SC 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION  
REPORT 05000395/2004004

Dear Mr. Archie:

On September 25, 2004, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 29, 2004, with Mr. Thomas Gatlin 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. However, a licensee-identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. If you contest this non-cited violation, 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.

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/**

Kerry D. Landis, Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

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

Enclosure: NRC Integrated Inspection Report 05000395/2004004  
w/Attachment: Supplemental Information

cc w/encl.:

R. J. White  
Nuclear Coordinator (Mail Code 802)  
S.C. Public Service Authority  
Virgil C. Summer Nuclear Station  
Electronic Mail Distribution

Ronald B. Clary, Manager  
Nuclear Licensing (Mail Code 830)  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station  
Electronic Mail Distribution

Kathryn M. Sutton, Esq.  
Winston and Strawn  
Electronic Mail Distribution

Henry J. Porter, Director  
Division of Radioactive Waste Mgmt.  
Dept. of Health and Environmental  
Control  
Electronic Mail Distribution

R. Mike Gandy  
Division of Radioactive Waste Mgmt.  
S.C. Department of Health and  
Environmental Control  
Electronic Mail Distribution

Thomas D. Gatlin, General Manager  
Nuclear Plant Operations (Mail Code 303)  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station  
Electronic Mail Distribution

Distribution w/encl.:  
 K. Cotton, NRR  
 L. Slack, RII  
 RIDSNRRDIPMIIPB  
 PUBLIC

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-395

License No.: NPF-12

Report No.: 05000395/2004004

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

Facility: Virgil C. Summer Nuclear Station

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

Dates: June 27, 2004 - September 25, 2004

Inspectors: J. Zeiler, Senior Resident Inspector  
S. Sanchez, Acting Senior Resident Inspector (5/30/04 - 7/23/04)  
M. Cain, Resident Inspector  
M. King, Resident Inspector  
L. Garner, Senior Project Engineer, Region II  
M. Maymi, Reactor Inspector, Region II  
J. Kreh, Emergency Preparedness Inspector, RII (Sections 1EP2 - 1EP5,  
4OA1.2)

Approved by: K. D. Landis, Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000395/2004004; 6/27/2004 - 09/25/2004; Virgil C. Summer Nuclear Station; routine integrated inspection report.

The report covered a three month period of inspection by resident inspectors and an announced inspection by one regional senior reactor inspector. One licensee-identified non-cited violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). 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 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violation

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

## REPORT DETAILS

### Summary of Plant Status

The unit remained at or near full power operation during the entire inspection period.

#### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

The inspectors performed three readiness inspections for impending adverse weather conditions. This included site preparation and readiness for high winds and heavy rains expected from hurricanes Bonnie, Charley, and Ivan. The inspectors reviewed the site's preparation and evaluated implementation of adverse weather procedure Operations Administrative Procedure (OAP)-109.1, "Guidelines for Severe Weather." The inspectors reviewed the licensee's corrective action program (CAP) database to verify that adverse weather related problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved. Additionally, in Section 1R06 of this report, potential internal building flooding issues that could result from adverse weather were reviewed. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment

##### a. Inspection Scope

The inspectors conducted three partial equipment alignment walkdowns (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 (SOPs), Final Safety Analysis Report (FSAR), and Technical Specifications (TS). The inspections included review of outstanding maintenance work requests (MWRs) and related Condition Evaluation Reports (CERs) to verify that the licensee had properly identified and resolved equipment alignment problems that could impact mitigating system availability. Documents reviewed are listed in the Attachment.

- A residual heat removal (RHR), while B RHR pump was OOS for scheduled maintenance and surveillance;
- B emergency diesel generator (EDG), while the A EDG was out of service during scheduled quarterly maintenance and surveillance testing; and,
- A EDG, while B EDG was out of service for scheduled maintenance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed recent CERs, MWRs, and impairments associated with the fire suppression 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 nine areas (respective fire zones also noted):

- 1DA switchgear room (fire zone IB-20);
- Relay room solid state protection system instrumentation and inverter (fire zones CB-6, 10, and 12);
- Turbine building (fire zone TB-1);
- 1DB switchgear rooms and heating ventilation and air conditioning rooms (fire zones IB-16, 17, and 22.2);
- EDG rooms A and B (fire zones DG-1.1/1.2, DG-2.1/2.2);
- Control building 412' and 425' operations support center cable spreading rooms (fire zones CB-1.1/1.2, CB-2, CB-5);
- Turbine driven emergency feedwater pump room (fire zone IB-25.2);
- Service Water (SW) pumphouse (fire zones SWPH-1, 3, 5.1, 5.2) during routine operations; and,
- SW pumphouse (fire zones SWPH-1, 3, 5.1, 5.2) during hot work and A SW traveling screen welding / replacement activity.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed and walked down two areas (i.e., Auxiliary Building 374' elevation and EDG Building) regarding internal flood protection features and equipment to determine consistency with design requirements, FSAR and flood analysis documents. Risk significant structures, systems, and components in these areas included the residual heat removal and reactor building spray pumps, EDGs, and EDG fuel oil transfer system. 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. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

The inspectors reviewed heat exchanger test data for trains A and B component cooling water heat exchangers (CCW Hxs). The CCW system is ranked by the licensee as the highest risk significant system based on importance. This review verified that the frequency of testing was sufficient and established acceptance criteria was appropriate to detect any potential CCW Hx deficiencies. The inspectors specifically examined the performance test results from the last CCW Hx inspection and subsequent evaluation by the licensee. The review also verified whether heat sink performance problems were adequately identified and entered into the licensee's corrective action program. Trending analysis, test frequency, and future testing plans for the CCW Hxs were discussed with the system engineer responsible for monitoring heat exchanger performance.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

On September 14, 2004, the inspectors observed performance of senior reactor operators and reactor operators on the plant simulator during licensed operator requalification training. The training scenario (LOR-SA-023) involved a failed pressurizer level transmitter, stuck control rods and small break loss-of-coolant accident. The inspectors verified that training included risk-significant operator actions, implementation of emergency classification and the emergency plan. The inspectors assessed overall crew performance, communication, oversight of supervision, and the evaluators' critique. The inspectors verified that any training issues were appropriately captured in the licensee's corrective action program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors evaluated two equipment issues described in the CERs listed below to verify the licensee's effectiveness of the corresponding preventive or corrective maintenance associated with structures, systems or components (SSCs). The inspectors reviewed maintenance rule (MR) implementation to verify that component and equipment failures were identified, entered, and scoped within the MR program.



Selected SSCs were reviewed to verify proper categorization and classification in accordance with 10 CFR 50.65. The inspectors examined (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 (MPFF) 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, "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.

- CERs 0-C-04-0036, 0-C-04-0208 and 0-C-04-1807, failure of NTD Card IPCY02020, steam generator C power operated relief valve driver card; and,
- CER 0-C-04-0273, trip of A chilled water system chiller on low refrigerant pressure.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's assessments of the risk impacts of removing from service those components associated with emergent work items. The inspectors evaluated the five selected SSCs and or emergent work listed below for: (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 listed below:

- Removal and Restoration (R&R) 040289, B SW system booster pump OOS for scheduled maintenance with R&R 040288, C CCW pump breaker OOS for preventative maintenance (PM);
- R&R 040332, A EDG OOS for scheduled quarterly maintenance, with R&R 040333, A EDG supply fans OOS for scheduled maintenance;
- R&R 040336, turbine driven emergency feedwater pump (XPP-8) for replacement of supply pressure regulator IFV2030-MS with R&R 040253 SW pump A traveling screen for repairs and parts replacement;
- STP-223.002A, Section 6.5, SW Booster Pump A Quarterly Inservice Pump Test, with train A SW traveling screen work in progress (diver entry planned) and reactor building cooling unit XFN0065A inoperable (R&Rs 040344, 040253, 040340); and,
- R&R 040358, XPP001B, B CCW pump OOS for planned maintenance; EMP-245.001, Main Generator and Alterex Preventative Maintenance Inspection in

progress, and review of EIRs 80932 and 80932A concerning functionality of XPP0039A, A SW pump with A SW traveling screening not installed (undergoing refurbishment).

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events

a. Inspection Scope

The inspectors evaluated operators' response to chemical and volume control system (CVCS) manual letdown isolation following unexpected closure of letdown containment isolation valve during surveillance testing (CER 0-C-04-2961), to ensure they were appropriate and in accordance with Abnormal Operating Procedure (AOP)-102.1. The inspectors also evaluated performance and equipment problems to ensure that they were entered into the corrective action program.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five 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) where compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) the impact on TS limiting conditions for operations and the risk significance in accordance with the Significance Determination Process (SDP). The inspectors verified that the operability evaluations were performed in accordance with procedure SAP-1131, "Corrective Action Program."

- CER 0-C-04-2282, turbine driven emergency feedwater (TDEFW) pump oil leak;
- CERs 0-C-04-1016, 0-C-04-2048 and XVC03135A-SW, train B SW booster pump discharge check valve did not exhibit required movement during quarterly surveillance tests;
- CER 0-C-04-2627, TDEFW pump casing steam drain valve, XVT02804A, mis-positioning;
- CER 0-C-04-2654, B train subcooling monitor surveillance adversely affects opposite train monitor;
- CERs 0-C-04-2996 and 0-C-04-3013, steam generator A blowdown header isolation valve exceeded its maximum limiting stroke time.

b. Findings

No findings of significance were identified. Section 4OA7 of this report discusses a licensee-identified violation related to CER 0-C-04-2627.

1R16 Operator Work-arounds

a. Inspection Scope

One risk significant operator work-around review was performed (reference CER 0-C-04-0223). This work-around required shift test specialists to check emergency siren availability and controller printer being on-line every six hours (due to a potential for sirens to be unavailable without an alarm notification). The inspectors reviewed the licensee's actions to ascertain any impact on the functional capability of the siren alert and notification system. The inspectors reviewed the human reliability aspect of the operator work-around and challenges. This review was performed to determine the impact on the operator's ability to respond, in a correct and timely manner, to an initiating event and implement abnormal or emergency operating procedures including off-site emergency notifications. The inspectors also reviewed long term corrective actions for this condition being implemented this quarter under MWR 0412542 (Install new siren activation equipment in control room, shift supervisor office and emergency planning area in support of ECR 50512, Alert and Notification System Replacement).

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors evaluated design change packages for three related modification Engineering Change Requests (ECRs) which represent a single permanent plant modification review. The purpose of this review was to evaluate the modification for adverse effects on system availability, reliability, and functional capability. The modification and associated attributes reviewed are as follows:

ECR-70436, Control Room Low Differential Pressure (DP) Alarm Switch Setpoint Revision;

ECR-70437, Replacement of Control Room Hi/Lo DP Switch Gauge; and,  
ECR-70438, Upgrade of the Control Room DP Switches and Alarm Card, for

- Field installation;
- Materials/components compatibility, functionality and consistency with design bases;
- Post modification performance; and,
- Plant procedure, critical drawing, design basis information, and FSAR updating.

For the selected modification package, the inspectors observed the as-built configuration. Documents reviewed included procedures, engineering calculations, modifications design and implementation packages, MWRs, site drawings, corrective action documents, applicable sections of the FSAR, supporting analyses, TS, and design basis information.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)

a. Inspection Scope

For the six PMTs listed below, the inspectors reviewed the test procedure and witnessed either 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) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with General Test Procedure (GTP)-214, "Post Maintenance Testing Guideline."

- MWR 0408339, PMT for visual inspection, megger, bridge, and lubricate A CCW pump;
- MWR 0404954, PMT for re-installation of instrumentation associated with A SW traveling screen;
- MWR 0312151, PMT for replacing pressure regulator for turbine driven emergency feedwater steam emission valve IFV2030-MS;
- MWRs 0411579, 0411658, 0411675, PMT for megger, bridge and lubricate C CCW pump and calibration of IPI07020, C CCW pump suction gauge;
- MWRs 0414375, 0409225, 0407851, PMT for motor PM and 7.2 kilovolt breaker swap and testing for A reactor building spray pump; and,
- PMT for MWRs 0207049, 0316095, 0405218, 0405405, 040668, 0408683, 0410878, 0410508, SW pump B rework relay terminals per NCN-03-0103, various pump motor preventative maintenance items and replacing XVG-3105B-PRI-SW.

b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing

### a. Inspection Scope

For the six surveillance tests listed below, the inspectors examined the test procedure and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable:

- STP-222.002, "Component Cooling Pump Test (IST)" (for the A pump);
- STP-345.074, "Solid State Protection System Actuation Logic and Master Relay Test" (for Train B, with troubleshooting plan under MWR 0414956);
- STP-223-002A, "Service Water Pump Test" (for Section 6.5, XPP0045A, Service Water Booster Pump A, Quarterly Group B Inservice Pump Test);
- STP-220.002, "Turbine Driven Emergency Feedwater Pump and Valve Test;"
- STP-223.002A, "Service Water Pump Test" (for Section 2.2, XPP0039A, Service Water Pump A); and,
- STP-345.077, "Engineered Safety Feature Actuation Slave Relay Test for Train B XPN-7021."

### b. Findings

No findings of significance were identified.

## 1R23 Temporary Plant Modifications

### a. Inspection Scope

The inspector reviewed Bypass Authorization Requests (BARs) 04-03, CER 0-C-04-2159, temporary installation of a jumper across shunt trip test switch for A reactor trip breaker, and BAR 04-02, CER 0-C-04-2165, bypass of control rod dive motor (CRDM) cooling pump high temperature trip. The inspectors verified that the temporary modifications did not affect system operability or availability as described by the TS and FSAR. In addition, the installation of the temporary modifications were verified in accordance with the work package, that adequate configuration controls were in place, procedures and drawings were updated, and post-installation tests verified operability of the affected systems.

### b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**1EP2 Alert and Notification System Testing (71114.02)a. Inspection Scope

The inspectors ascertained the licensee's commitments with respect to the testing and maintenance of the alert and notification system (ANS), which comprised 106 sirens in the ten-mile-radius emergency planning zone. The licensee's testing program, delineated in Section 5.7 of the Radiation Emergency Plan (REP), included weekly silent tests, monthly growl tests, and annual full-volume tests. ANS changes during the past two years, post-maintenance testing methodology, and siren test records (with an emphasis on identification of any repetitive individual siren failures) were reviewed and discussed with cognizant management and maintenance personnel. The inspectors observed the licensee's performance of a monthly growl test of the ANS on August 3, 2004. A sample of corrective actions was evaluated to determine their effectiveness in addressing ANS problems. The review of this program area encompassed the period September 2002 through July 2004. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation (71114.03)a. Inspection Scope

The inspectors reviewed the maintenance and testing of the licensee's capability to staff emergency response facilities (ERFs) in accordance with the personnel and timeliness requirements specified in Sections 5.2, 5.3, and 8.1.2.e of the REP. The licensee's "all-call" pager methodology and manual backup system for call-out of ERO personnel were evaluated to determine whether they would support staff augmentation in accordance with the above-referenced REP requirements. Records were reviewed of the most recent off-hour ERO augmentation drill involving actual travel to the plant and activation of ERFs, conducted on October 29, 2002, as well as documentation of the semiannual ERO pager drills for the past two years. The inspectors also reviewed and discussed changes to the augmentation system and process during the past two years. Follow-up activities for a sample of problems identified through ERO augmentation testing were evaluated to determine whether appropriate corrective actions were implemented. The review of this program area encompassed the period September 2002 through July 2004. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors reviewed a selected sample of changes made to the REP since the last inspection in this program area (conducted in July 2003) against the requirements of 10 CFR 50.54(q) to determine whether any of the changes decreased REP effectiveness. The licensee had implemented REP Revisions 47 and 48, including modifications to the EALs in both revisions. The inspectors conducted a detailed review of all EAL changes, and reviewed documentation of the licensee's 10 CFR 50.54(q) screening evaluations for the referenced revisions. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors evaluated the efficacy of licensee programs that addressed weaknesses and deficiencies in emergency preparedness. The procedure governing the plant corrective action program was reviewed for applicability to the emergency preparedness program. Since the last inspection of this program area (September 2002), no emergency declarations were made by the licensee. Reports on the last two annual QA audits, performed in accordance with 10 CFR 50.54(t), and two self-assessments were reviewed. The inspectors evaluated selected drill scenarios and associated critiques to determine whether the licensee had properly identified failures to implement regulatory requirements and planning standards. A sample of weaknesses and deficiencies identified by means of these licensee processes was evaluated to determine whether corrective actions were effective and timely. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator (PI) Verification

.1 Reactor Safety: Mitigating Systems Cornerstone

a. Inspection Scope

To verify the accuracy of the data reported from April 2003 to July 2004 for the two PIs listed below, the inspectors used performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment

Performance Indicator Guideline,” Revision 2. The inspectors reviewed a selection of station logs, removal and restoration logs, corrective action program documents, Equipment Out of Service (EOOS) computer log records, Licensee Event Reports (LERs) and PI data sheets to verify the basis for reporting each data element. The inspectors also reviewed responses contained in the NRC's frequently asked question PI database and the inspectors interviewed licensee personnel associated with the PI data collection, evaluation and distribution. The inspectors verified data for the following two PIs:

- Safety System Unavailability, Heat Removal System; and,
- Safety System Functional Failures.

b. Findings

No findings of significance were identified.

.2 Reactor Safety: Emergency Preparedness Cornerstone

a. Inspection Scope

The inspectors sampled licensee submittals relative to the three PIs listed below for the period July 1, 2003 through June 30, 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 2, were used to confirm the reporting basis for each data element.

- Emergency Response Organization (ERO) Drill/Exercise Performance;
- ERO Drill Participation; and,
- Alert and Notification System Reliability.

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee’s records of periodic ANS tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.



#### 4OA2 Identification and Resolution of Problems

##### .1 Annual Sample Review

###### a. Inspection Scope

The inspectors selected CER 0-C-04-0886, manual main turbine trip due to high vibration, for a detailed review. This CER was associated with a manual turbine trip due to high main turbine vibration while decreasing power to address a leak on reactor coolant pump C seal injection line on March 30, 2004. The CER was reviewed to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the CER against the requirements of the licensee's CAP as delineated in Station Administrative Procedure (SAP)-1131, "Corrective Action Program," and 10 CFR 50, Appendix B.

###### b. Findings and Observations

No findings of significance identified.

##### .2 Daily Reviews

###### 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 followup, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily CER summary reports and attending daily CER review meetings.

###### b. Findings and Observations

No findings of significance identified.

#### 4OA3 Event Follow-up

##### .1 (Closed) Licensee Event Report (LER) 50-395/2003-003-01: Control Room Ventilation Boundary Breached During Maintenance

The inspectors reviewed the subject LER (Revision 1) and the associated CER 0-C-03-2819 that assessed the root cause and identified licensee corrective actions taken for discovery of control room ventilation boundary being breached during maintenance activities on September 8, 2003. This issue had previously been reviewed under Sections 1R15 and 4OA7.4 of NRC Inspection Report (IR) 05000395/2003004 and a licensee-identified violation of very low significance (Green) was documented. The original LER was reviewed in NRC IR 05000395/2003005.

The licensee has completed the root cause and self-identified that there were eleven causal factors associated with human performance difficulties for this event (i.e.,

procedures, programs, processes or training). The root cause and corrective actions which includes numerous procedure revisions, additional training, and establishing a Control Room Pressure Barrier Program are documented in CER 0-C-03-2819. No additional findings of significance were identified during this review.

.2 (Closed) LER 50-395/2004-002-00: Safety System Actuation Due to Momentary Loss of Offsite Power

The inspectors reviewed the subject LER and the associated CER 0-C-04-1846 that assessed the cause and corrective actions for momentary loss of the normal incoming Engineered Safety Features (ESF) offsite power for the A train electrical bus. This event occurred on June 12, 2004, and resulted in the opening of undervoltage relays of the normal incoming ESF feed to the station for the A train (1DA) safety-related 7.2 kV electrical bus. The A emergency diesel generator started and sequenced on to the 1DA bus as designed. The A residual heat removal pump and the A emergency feedwater pump started as expected for this condition. Other plant equipment and systems also responded as expected. The B train safety-related electrical bus was unaffected by this event.

The cause of this event was attributed to a lightning strike causing multiple breakers to open at the Parr Substation which resulted in a temporary loss of 115 kV voltage from the substation. A faulty breaker at the Parr Substation which failed to isolate the incoming fault was identified subsequent to this event. The faulty breaker at the substation was repaired. This breaker is not part of Virgil C. Summer hardware and is considered outside the scope of the MR. However, the licensee did appropriately consider and review this event under their MR program due to the unplanned safety system actuation. No findings of significance were identified during this review.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Thomas Gatlin and other members of the licensee staff on September 29, 2004. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

TS 6.8.1.c. requires, in part, that written procedures shall be established, implemented and maintained covering surveillance and test activities of safety-related equipment including the auxiliary (emergency) feedwater system. Surveillance test procedure STP-220.002, "Turbine Driven Emergency Feedwater Pump and Valve Test," was written to support safety-related equipment surveillance testing of the turbine driven emergency feedwater pump. Contrary to the requirements of STP-220.002, the "as-found" position

of valve XVT02804A-MS (Emergency Feedwater Pump Casing Steam Drain Valve) was incorrectly determined to be closed versus open, resulting in the valve being mis-positioned closed during the surveillance restoration steps. The valve remained mis-positioned closed from July 20, 2004, until discovered by the licensee on August 16, 2004, during the next scheduled surveillance test. Because this valve mis-positioning did not result in the turbine driven emergency feedwater pump being inoperable as well as the motor driven emergency feedwater pumps were operable, this violation is of very low safety significance and is being treated as a non-cited violation. This issue was entered into the licensee's corrective action program as CER 0-C-04-2627.

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

J. Archie, Vice President, Nuclear Operations  
F. Bacon, Manager, Chemistry Services  
L. Blue, Manager, Health Physics Services  
M. Browne, Manager, Quality Systems  
R. Clary, Manager, Nuclear Licensing  
M. Findlay, Manager, Nuclear Protection Services  
M. Fowlkes, General Manager, Engineering Services  
T. Franchuk, Supervisor, Quality Assurance  
S. Furstenberg, Manager, Nuclear Operations Training  
D. Gatlin, General Manager, Nuclear Plant Operations  
D. Lavigne, General Manager, Organization Effectiveness  
G. Lippard, Manager, Operations  
J. Nesbitt, Manager, Materials and Procurement  
K. Nettles, General Manager, Nuclear Support Services  
W. Stuart, Manager, Plant Support Engineering  
R. Sweet, Supervisor, Nuclear Licensing  
A. Torres, Manager, Planning / Scheduling and Project Management  
S. Zarandi, Manager, Maintenance Services

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

None

#### Closed

05000395/2003-003-01	LER	Control Room Ventilation Boundary Breached During Maintenance (Section 4OA3.1)
05000395/2004-002-00	LER	Safety System Actuation Due to Momentary Loss of Offsite Power (Section 4OA3.2)

#### Discussed

None

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather**

EIR 80964, Non-standard repairs for security and electrical manholes  
CER 0-C-02-2800, Water problems  
CER 0-C-04-2593, brief tornado warning was reported to control room after it was over  
CER 0-C-04-2595, Refueling Water Storage Tank (RWST) pit frequently has standing water during and after heavy rains

### **Section 1R04: Equipment Alignment**

FSAR Sections 5, 6, 8.3.1  
SOP-115, "Residual Heat Removal"  
SOP-306, "Emergency Diesel Generator"  
SOP-307, "Diesel Generator Fuel Oil System"  
TS 3/4.8.1, A.C. Sources  
TS 3/4.5.2,5.3,5.4, and 3/4.9.3, 3.9.7.1 and 3.9.7.2 (for RHR)  
Design Basis Documents for EDG and RHR systems  
CER data base search for EDG and RHR systems  
List of open MWRs for EDG and RHR system  
Drawings: D-302-641 RHR system  
D-302-351 DG-Fuel Oil  
D-302-353 DG-Miscellaneous Services

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

NRC Inspection Procedure IP-71111.06, Flood Protection Measures  
FSAR (word search review for: flood ), sections 1.1, 1.2, 1.7, 2.1, 2.4, 3.1, 6.0, 7.1, 9.9, 10.1  
CMP-700.012, Embedded Pull Box Inspection  
CMP-700.013, Inspection of Electrical Manholes  
EIR 80964: Non-Standard Repairs for Security and Electrical Manholes  
Recent (2004 potential internal flood related CERs):  
0-C-04-2866, During TS Frances, large rain fall caused several areas of water influx into bldgs  
0-C-04-2858, Low flow rate from caustic sump pumps, will not keep up with inflow of water, water backing up into the HP calibration lab  
0-C-04-2856, Rain water inleakage during tropical storm. Rad Waste Group estimates 800 gallons per hour into the Auxiliary Building  
0-C-04-2595, The RWST pit frequently has standing water during and after heavy rains  
0-C-04-1961, Rain water leaking from conduit into recycle evaporator room (Aux Bldg)  
Old CERs: 0-C-02-3922; -3400; -2800 and 0-C-01-2339; -2163; -2159; -1949; -1773; and -1237

## **Sections 1EP2 - 1EP5: Reactor Safety - Emergency Preparedness**

### Plans and Procedures

Radiological Emergency Plan, Rev. 48 (effective 04/14/2004) and Rev. 47  
SAP-1131, Corrective Action Program, Rev. 5  
SAP-143, Preventive Maintenance Program, Rev. 11D  
EMP-170.003, Warning Siren Maintenance, Rev. 9D  
EPP-001, Activation and Implementation of Emergency Plan, Rev. 25B  
EPP-026, Operation of the Siren Control System, Rev. 1A  
EPP-104, Verification of Communications Operability, Rev. 6  
EPP-105, Conduct of Drills and Exercises, Rev. 5

### Records and Data

10 CFR 50.54(q) Plan Effectiveness Determinations for REP Revs. 47 and 48  
Siren System Availability Test Records for September 2002 - July 2004  
Report to ERO and Plant Management re: 10/29/2002 ERO Augmentation Drill, 11/20/2002  
Final Report - 03/12/2003 Semiannual Off-Hour Pager Drill, 03/31/2003  
Final Report - 10/07/2003 Semiannual Off-Hour Pager Drill, 10/31/2003  
Final Report - 05/10/2004 Semiannual Off-Hour Pager Drill, 05/24/2004  
Documentation package (scenario/time line/event notification forms/critique report) for ERO drill on 03/03/2004

### Audits and Self-Assessments

Quality Assurance Audit Report No. QA-AUD-200307-0, Station Emergency Plan, 05/29/2003  
Quality Assurance Audit Report No. QA-AUD-200407-0, Station Emergency Plan, 07/30/2004  
Self-Assessment Report No. SA03-NP-03, Emergency Plan Program, performed 12/08-11/2003 and 01/07/2004  
Self-Assessment Report No. SA04-NP-01, Emergency Plan Program, performed 04/26-30/2004

### Condition Evaluation Reports (CERs)

0-C-02-3412, Results of staff augmentation drill held on 10/29/2002 and 10/29/2002  
0-C-04-0223, Ice storm resulted in the loss of greater than 25% of the siren system  
0-C-04-0389, Audible alarm for siren system computer was found silenced on two occasions  
0-C-04-0462, Coordinate corrective actions related to siren computer console audible alarm and programmatic issues  
0-C-04-0530, Simulator crew failed two of four DEP opportunities  
0-C-04-0622, Drill Critique items from 03/03/2004 training drill  
0-C-04-0665, During 03/03/2004 training drill, the failure of 2 sirens was not reported to the EOF for 65 minutes, delaying implementation of route alerting  
0-C-04-1283, Personnel failed to respond to pager drill  
0-C-04-1371, Protective Action Recommendation made during the 05/05/2004 training drill was inaccurate

0-C-04-1389, Drill Critique items from 05/05/2004 training drill

0-C-04-2221, Duty person for Security Coordinator position did not respond to ERO group page

0-C-04-2421, Loss of pager system was discovered when the scheduled weekly pager test was not received

0-C-04-2521, This CER is to track the results of the off-hour pager drill conducted on 05/05/2004

0-C-04-2530, NRC identified two instances where ANS PI data were reported in error

### **Section 40A1: Performance Indicator Verification**

#### **Procedures, Records, and Data**

SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, Revision 2

EPP-106, Emergency Preparedness Performance Indicator Procedure, Revision 0

Siren System Availability Test Records for April 2003 - March 2004

Documentation package (scenario/time line/event notification forms/critique report) for ERO drill on 03/03/2004

Documentation of DEP Opportunities from Operations Simulator Evaluations on 02/11/2004, 02/23/2004, 02/25/2004, and 05/26/2004