



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

October 29, 2010

EA-10-204

Mr. Thomas D. Gatlin  
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 05000395/2010004 AND NRC EMERGENCY PREPAREDNESS  
INSPECTION REPORT 05000395/2010501 AND NOTICE OF VIOLATION**

Dear Mr. Gatlin:

On September 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station. The enclosed inspection report documents the inspection results, which were discussed on October 14, 2010, 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 the inspection, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation and the circumstances surrounding it are described in detail in the subject inspection report. The violation involved a failure to notify the NRC with regard to a change in the medical status of a licensed operator. Although determined to be of very low safety significance (Severity Level IV), this violation is being cited in the Notice because as specified in Section 2.3.2.a.3 of the Enforcement Policy, it was (a) a repeat violation resulting from inadequate corrective action, and (b) was NRC identified. Specifically, this violation was first identified in NRC Inspection Report 05000395/2008004, and the same violation was again identified by NRC inspectors while performing a licensed operator requalification inspection. You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In addition, this report documents a licensee-identified violation which was determined to be of very low safety significance (Green). Because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC's Enforcement Policy. If you contest the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station.

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

Enclosures:

1. Notice of Violation
2. NRC Integrated Inspection Report 05000395/2010004 and NRC Emergency Preparedness Inspection Report 05000395/2010501w/attachment: Supplemental Information

cc w/encl: (See page 3)

In addition, this report documents a licensee-identified violation which was determined to be of very low safety significance (Green). Because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC's Enforcement Policy. If you contest the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station.

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Sincerely,  
**/RA/**  
 Gerald J. McCoy, Chief  
 Reactor Projects Branch 5  
 Division of Reactor Projects

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 ADAMS: X      ACCESSION NUMBER: \_\_\_\_\_ X SUNSI REVIEW COMPLETE

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SIGNATURE	Via email	Via email	Via email	Via email	DAJ /RA/	HJG /RA for/	Via email
NAME	JZeiler	DArnett	JDodson	RHamilton	DJones	SGarchow	ASengupta
DATE	10/26/2010	10/26/2010	10/27/2010	10/25/2010	10/27/2010	10/28/2010	10/26/2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
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SIGNATURE	Via email	Via email	Via email	Via email	Via email	Via email	Via email
NAME	JBeavers	CFletcher	DPenaranda	LSuggs	MMeeks	ANielsen	WLoo
DATE	10/26/2010	10/26/2010	10/26/2010	10/26/2010	10/28/2010	10/25/2010	10/26/2010
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SIGNATURE	Via email	GJM /RA/					
NAME	CDykes	GMcCoy					
DATE	10/28/2010	10/28/2010					
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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Letter to Thomas D. Gatlin from Gerald J. McCoy October 29, 2010

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION  
REPORT 05000395/2010004 AND NRC EMERGENCY PREPAREDNESS  
INSPECTION REPORT 05000395/2010501 AND NOTICE OF VIOLATION

Distribution w/encl:

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## NOTICE OF VIOLATION

South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station

Docket No: 50-395  
License No: NPF-12  
EA-10-204

During an NRC inspection conducted on August 23 through August 26, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR Part 55.25, "Incapacitation because of disability or illness," requires, in part, that if a licensed operator develops a permanent physical or mental condition that causes the licensed operator to fail to meet the requirements of 55.21, the facility licensee shall notify the Commission within 30 days of learning of the diagnosis.

Contrary to the above, from September 9, 2009, to August 26, 2010, the facility licensee failed to notify the Commission within 30 days of learning of the diagnosis that a licensed operator had developed a permanent physical or mental condition that caused the licensed operator to fail to meet the requirements of 55.21. Specifically, a licensed operator was placed in a "no-solo" status by the facility licensee's medical review officer due to a permanent change in the individual's medical condition, and the licensee failed to notify the Commission within 30 days of learning of the change in medical condition as required.

This is a Severity Level IV violation (Supplement I).

Pursuant to the provisions of 10 CFR 2.201, South Carolina Electric and Gas Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region II, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation. This reply should be clearly marked as a "Reply to Notice of Violation EA-10-204," and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Enclosure 1

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC website at [www.nrc.gov/reading-rm/pdr.html](http://www.nrc.gov/reading-rm/pdr.html) or [www.nrc.gov/reading-rm/adams.html](http://www.nrc.gov/reading-rm/adams.html), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the basis for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Dated this 29<sup>th</sup> day of October 2010

**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 50-395

License No.: NPF-12

Report No.: 05000395/2010004

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

Facility: Virgil C. Summer Nuclear Station

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

Dates: July 1, 2010 through September 30, 2010

Inspectors: J. Zeiler, Senior Resident Inspector  
J. Polickoski, Resident Inspector  
D. Arnett, Project Engineer  
J. Beavers, Emergency Preparedness Inspector (Sections 1EP2, 1EP3, 1EP4, 1EP5, and 4OA1.2)  
C. Dykes, (Sections 2, 4OA1.3, and 4OA1.4)  
C. Fletcher, Senior Reactor Inspector (Section 1R17)  
S. Garchow, Senior Operations Engineer (Section 1R11.2)  
R. Hamilton, Senior Health Physicist (Sections 2, 4OA1.3, 4OA1.4, and 4OA5.2)  
D. Jones, Senior Reactor Inspector (Section 1R17)  
W. Loo, (Sections 2, 4OA1.3, 4OA1.4, and 4OA5.2)  
D. Mas-Penaranda, Reactor Inspector (Section 1R17)  
M. Meeks, Operations Engineer (Section 1R11.2)  
A. Nielsen, (Sections 2, 4OA1.3, 4OA1.4, and 4OA5.2)  
A. Sengupta, Reactor Inspector (Section 1R07)  
L. Suggs, Reactor Inspector (Section 1R17)

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

Enclosure 2



## SUMMARY OF FINDINGS

IR 05000395/2010004; 07/01/2010 - 09/30/2010: Virgil C. Summer Nuclear Station; Licensed Operator Requalification.

The report covered a 3-month period of inspection by resident inspectors, a project engineer and announced inspections by regional health physics inspectors, reactor inspectors, operations engineers, and an emergency preparedness inspector. One cited Severity Level (SL) IV violation was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspect was determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

- SL IV. The inspectors identified a cited violation of 10 CFR Part 55.25, "Incapacitation because of disability or illness," for the failure of the facility licensee to notify the Commission of a change in the medical status of one licensed operator within 30 days of learning of the change as required. This issue was entered into the licensee's corrective action program as Condition Report CR-10-03348.

The failure of the facility licensee to notify the Commission within 30 days of learning of a permanent change in the medical status of a licensed operator as required by 10 CFR 55.25 was a performance deficiency. This performance deficiency was evaluated in accordance with the Enforcement Policy and determined to be a Severity Level IV violation in accordance with Supplement I. This violation is being cited in accordance with the Enforcement Policy Section 2.3.2.a.3 because it was a repetitive violation resulting from inadequate corrective action and was NRC identified. Because this Notice of Violation was evaluated in accordance with Traditional Enforcement, there was no cross-cutting aspect assigned. (Section 1R11.2)

### B. Licensee-Identified Violations

A violation of very low safety significance that 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 corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

The unit began the inspection period at full Rated Thermal Power (RTP). Between July 30 and August 27, the unit was down powered slightly on several occasions to ensure the average circulating water discharge temperature limit would not be exceeded. On September 23, a planned shutdown to Mode 3 was initiated to investigate a low oil level alarm on the 'A' reactor coolant pump motor upper oil reservoir. The reactor was restarted on September 25 following the completion of oil leakage repairs and was returned to full RTP on September 26. The unit operated at full RTP for the remainder of the period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### 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 potential impact from Hurricane Earl. The inspectors verified the licensee had implemented applicable sections of operations administrative procedure (OAP)-109.1, Revision (Rev.) 3A, "Guidelines for Severe Weather," and emergency planning procedure (EPP)-015, Rev. 17, "Natural Emergency." The inspectors walked down site outside areas and monitored licensee response actions and weather report updates until the adverse weather conditions were over.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment

##### a. Inspection Scope

The inspectors conducted three partial equipment alignment walkdowns which are listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). Correct alignment and operating conditions were determined from the applicable portions of drawings, system operating procedures (SOPs), updated final safety analysis report (UFSAR), 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.

- 'B' service water (SW) and service water booster pumps (SWBP) while 'A' SWBP was OOS for scheduled maintenance
- 'A' and 'B' component cooling water (CCW) pumps while 'C' CCW was OOS for scheduled maintenance
- 'A' motor driven emergency feedwater (MDEFW) pump and turbine driven emergency feedwater (TDEFW) pump while 'B' MDEFW pump was OOS for scheduled maintenance

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed recent CRs, WOs, and impairments associated with the fire protection system. The inspectors reviewed surveillance activities to determine whether they supported the operability and availability of the fire protection system. The inspectors assessed the material condition of the active and passive fire protection systems and features and observed the control of transient combustibles and ignition sources. The inspectors conducted routine inspections of the following five areas (respective fire zones also noted):

- Service water pumphouse (SWPH) (fire zones SWPH-1, 3, 4, 5.1 and 5.2)
- Intermediate building (IB) 412' elevation (fire zones IB-25.1.1, 1.2, 1.3 and IB-1.5)
- 1DA switchgear room (fire zone IB-20)
- 'A' and 'B' chilled water pump rooms (fire zones IB-7.2, IB-9 and IB-23.1)
- TDEFW pump room (fire zone IB-25.2)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

Annual Review of Electrical Manholes

a. Inspection Scope

The inspectors reviewed and observed licensee periodic inspection of eight electrical manholes (i.e., EMH-0011, EMH0017, EMH0019, EMH-0023, EMH-0025, EMH-0026, EMH-0033, and EMH-0042) to assess the condition of electrical cables located inside the underground manholes. The inspectors verified by direct observation that the cables, splices, support structures, and sump pumps located within the manholes appeared intact and the cables were not being impacted by water. In addition, the inspectors reviewed several past periodic licensee inspection results for each of the

above mentioned manholes to ensure that any degraded conditions identified were appropriately resolved.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results and cooler inspection results associated with the 'A' and 'B' CCW heat exchangers (HXs), the 'A' and 'B' Residual Heat Removal (RHR) HXs, the 'A' and 'B' emergency diesel generator (EDG) intercooler HXs, and the 1B Containment Cooler HX. These heat exchangers/coolers were chosen based on their risk significance in the licensee's probabilistic safety analysis, their important safety-related mitigating system support functions and their relatively low margin.

For the CCW, the EDG intercooler heat exchanger, and the 1B Containment Cooler heat exchangers, the inspectors determined whether testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by determining whether the test method used was consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, the test acceptance criteria were consistent with the design basis values, and reviewing results of heat exchanger performance testing. The inspectors also determined whether the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values and test results considered test instrument inaccuracies and differences.

For the CCW, the EDG intercooler heat exchangers, the 1B Containment Cooler heat exchanger, and the RHR heat exchanger, the inspectors reviewed the methods and results of heat exchanger performance inspections. The inspectors determined whether the methods used to inspect and clean heat exchangers were consistent with as-found conditions identified and expected degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspectors determined whether the condition and operation of the CCW, the EDG intercooler heat exchangers, the 1B Containment Cooler heat exchanger, and the RHR heat exchangers, were consistent with design assumptions in heat transfer calculations and as described in the UFSAR. This included determining whether the

number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors determined whether the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow induced vibration during operation. Eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger. In addition, the inspectors determined whether the licensee's chemical treatment programs for corrosion control were consistent with industry norms, and implemented accordingly.

The inspectors determined whether the performance of ultimate heat sinks (UHS) and their subcomponents such as piping, intake screens, pumps, valves, etc. was appropriately evaluated by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems. For an above-ground UHS encapsulated by embankments, weirs or excavated side slopes, the inspectors reviewed the VC Summer Nuclear Power Plant Dam Safety and Inspection report performed on April 2009 by the Federal Energy Regulatory Commission (FERC).

The inspectors reviewed the licensee's operation of service water system and UHS. This included a review of licensee's procedures for a loss of the service water system or UHS and the verification that instrumentation, which is relied upon for decision making, was available and functional. In addition, the inspectors determined whether macrofouling was adequately monitored, trended, and controlled by the licensee to prevent clogging. The inspectors determined whether the licensee's biocide treatments for biotic control were adequately conducted and whether the results were adequately monitored, trended, and evaluated. The inspectors also reviewed strong pump / weak pump interaction and design changes to the service water system and the UHS.

The inspectors reviewed the licensee's performance testing of service water system and UHS results. This included a review of the licensee's performance test results for key components and service water flow balance test results. In addition, the inspectors compared the flow balance results to system configuration and flow assumptions during design basis accident conditions. The inspectors also determined whether the licensee ensured adequate isolation during design basis events, consistency between testing methodologies and design basis leakage rate assumptions, and proper performance of risk significant non-safety related functions.

The inspectors performed a system walkdown on service water and/or closed cooling water systems to determine whether the licensee's assessment on structural integrity was adequate. In addition, the inspectors reviewed available licensee's testing and inspections results, licensee's disposition of any active thru wall pipe leaks, and the history of thru wall pipe leakage to identify any adverse trends since the last NRC inspection. For closed cooling water systems, the inspectors reviewed operating logs or interviewed operators or system engineer, to identify adverse make-up trends that could be indicative of excessive leakage out of the closed system. For buried or inaccessible piping, the inspectors reviewed the licensee's pipe testing, inspection, or monitoring program to determine whether structural integrity was ensured and that any leakage or degradation was appropriately identified and dispositioned by the licensee.

The inspector performed a system walkdown of the service water intake structure to determine whether the licensee's assessment on structural integrity and component functionality was adequate and that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors determined whether service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee, and that water level instruments were functional and routinely monitored. The inspectors also determined whether the licensee's ability to ensure functionality during adverse weather conditions was adequate.

In addition, the inspectors reviewed condition reports related to the heat exchangers/coolers and heat sink performance issues to determine whether the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. The documents that were reviewed are included in the attachment to this report.

These inspection activities constituted seven heat sink inspection samples as defined in Inspection Procedure (IP) 71111.07-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Resident Inspector Observations

a. Inspection Scope

On August 17, 2010, the inspectors observed the performance of senior reactor operators and reactor operators on the plant simulator during licensed operator requalification annual examinations. The scenario involved a feedwater heater transient, reactor coolant pump seal failure, and a large break loss-of-coolant-accident complicated by containment recirculation screen blockage. 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 corrective action program (CAP).

b. Findings

No findings were identified.

.2 Licensed Operator Requalification

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of August 23, 2010, the inspectors

reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1985, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed one crew during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, simulator deficiency records, simulator performance test records, operator feedback records, licensed operator qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in IP 71111.11. Documents reviewed during the inspection are documented in the attachment.

b. Findings

Failure to Notify the Commission of a Change in Medical Status

Introduction: The NRC inspectors identified a cited Severity Level IV violation of 10 CFR Part 55.25, "Incapacitation because of disability or illness." Specifically, the facility licensee failed to notify the Commission of a permanent change in the medical status of one licensed operator within 30 days of learning of the change as required.

Description: The inspectors identified a failure of the licensee to notify the NRC of a change in medical status of one licensed operator that would have potentially resulted in an additional restriction placed on the individual's operator license.

The medical requirements applicable to individuals holding licenses to operate the controls of a nuclear power plant are contained in 10 CFR Part 55 Subpart C-Medical Requirements. 10 CFR 55.21, "Medical examination," states, in part, that "... A licensee shall have a medical examination by a physician every two years. The physician shall determine that the applicant or licensee meets the requirements of § 55.33(a)(1)." The facility licensee was committed to meet the medical requirements of 10 CFR 55.21 using ANSI/ANS-3.4-1983, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants." Section 2.2 of this standard defines "solo operation" as follows: "Operation of the controls, including monitoring of instrumentation during steady state operations, with no other qualified person in the control room or other specified control areas, such as the refueling console." Moreover, section 5.1 of ANSI/ANS-3.4-1983 states, in part, that "...The potential consequences of insidious incapacitation are most serious in solo operation, but shall be considered in any facility. Many of the conditions indicated above may be accommodated by restricting the activities of the individual, requiring close surveillance of the condition, imposing a

temporary medical regime, or requiring another individual to be present when the individual in question is performing his assigned duties.” The facility licensee administratively meets the requirement for a medical examination every two years by requiring each licensed operator to have a medical examination approximately once every calendar year.

10 CFR 55.23, “Certification,” further requires that “To certify the medical fitness of the applicant, an authorized representative of the facility licensee shall complete and sign NRC Form 396, “Certification of Medical Examination by Facility Licensee,” .... (a) Form NRC-396 must certify that a physician has conducted the medical examination of the applicant as required in § 55.21; (b) When the certification requests a conditional license based on medical evidence, the medical evidence must be submitted on NRC Form 396 to the Commission and the Commission then makes a determination in accordance with § 55.33.” Furthermore, 10 CFR 55.25 states, in part, that “If, during the term of the license, the licensee develops a permanent physical or mental condition that causes the licensee to fail to meet the requirements of § 55.21 of this part, the facility licensee shall notify the Commission, within 30 days of learning of the diagnosis, in accordance with § 50.74(c). For conditions for which a conditional license (as described in § 55.33(b) of this part) is requested, the facility licensee shall provide medical certification on Form NRC 396 to the Commission (as described in § 55.23 of this part).”

NRC Region II issued a license amendment to the individual in question effective August 31, 2009, requiring the individual to comply with three conditions; namely, that he shall wear corrective lenses while performing licensed operator duties, that he shall not perform any licensed activities that require use of a respirator, and that he shall take medication as prescribed. On September 9, 2009, the individual had a licensed operator medical evaluation performed by the facility licensee’s medical review officer. The medical review officer identified the three conditions listed above, and also determined that an additional medical restriction-for “no solo” operation-was also required based on the individual’s medical examination.

During the week of August 23, 2010, while performing a review of a random sample of 14 licensed operator medical records, including the above individual, as part of IP 71111.11, the inspectors noted the individual had a “no solo” restriction identified by the facility licensee’s medical review officer that was not reflected in the Operator Licensing Tracking System (OLTS) database maintained by the NRC. The inspectors determined that the discrepancy was because the NRC had not been notified of the change in the licensed operator’s medical status. Based on interviews and discussions with facility licensee personnel, the inspectors determined that due to the individual’s medical restrictions, the individual was taken off the regular control room licensed operator watch bill; the operator’s license was administratively declared inactive; and the individual was being used exclusively in an operations support position, e.g. to prepare and review clearance orders and work management.

After discussing the issue with the Senior Resident Inspector, the inspectors reviewed Integrated Inspection Report 05000395/2008004, dated October 30, 2008, and determined that the same issue was documented in this report as a Severity Level IV Non-Cited Violation (NCV). This report documented a licensee-identified NCV of 10



CFR 55.25 for failing to notify the Commission when eleven licensed operators were diagnosed with a permanent physical medical condition within 30 days as required by 10 CFR 55.25. This finding was identified by the licensee in CR-08-00080 and CR-05-03172.

Therefore, because this issue was (a) a repeat violation resulting from inadequate corrective action, and (b) NRC-identified, the inspectors determined that this issue needed to be cited as a Severity Level IV Notice of Violation (NOV).

Analysis: The inspectors initially screened the issue using Appendix B, "Issue Screening," of Inspection Manual Chapter (IMC) 0612. The inspectors then determined that the failure of the facility licensee to notify the Commission within 30 days of discovering a permanent change in the medical status of a licensed operator, as required by 10 CFR 55.25, was a performance deficiency. The inspectors determined that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct, and therefore should have been prevented.

The inspectors then determined that the performance deficiency, involving a violation of 10 CFR 55.25, impacted the regulatory process; and would therefore be dispositioned using Traditional Enforcement (TE). In accordance with Section 2.2.2, "Severity Levels," of the NRC's Enforcement Policy, the inspectors reviewed the violation against the examples listed in Section 6.0, and determined that the violation was of very low safety significance (Severity Level IV) because a physical examination required by 10 CFR Part 55 was not reported to the Commission. This constituted a more than minor concern because a change in medical status would have required Commission review and approval and would have resulted in change to the operator's license restrictions. In accordance with Section 2.3.2.a.3 of the Enforcement Policy, the inspectors determined that the violation was repetitive as a result of inadequate corrective action, and was identified by the NRC. Therefore, the violation met the requirements to be cited as a Severity Level IV NOV. The inspectors did not identify a cross-cutting aspect associated with this violation because the NOV was evaluated exclusively using TE, in accordance with IMC 0612 section 06.03.c.

Enforcement: Title 10 CFR Part 55.25, "Incapacitation because of disability or illness," requires, in part, that if a licensed operator develops a permanent physical or mental condition that causes the licensed operator to fail to meet the requirements of 55.21, the facility licensee shall notify the Commission within 30 days of learning of a diagnosis. Contrary to the above, from September 9, 2009, to August 26, 2010, the facility licensee failed to notify the Commission within 30 days of learning of the diagnosis that a licensed operator had developed a permanent physical or mental condition that caused the licensed operator to fail to meet the requirements of 55.21. Specifically, the licensed operator was placed in a "no-solo" status by the facility licensee's medical review officer due to a permanent change in the individual's medical condition without notifying the Commission as required. This finding was determined to be of very low safety significance because the licensed operator was removed from the list of active license holders, and the issue was entered into the corrective action program as CR-10-03348. Therefore, this violation of 10 CFR 55.25 was classified as a Severity Level IV violation. However, because this violation was (a) a repeat violation resulting from inadequate

corrective action, and (b) NRC identified, this violation is being cited in a NOV, consistent with Section 2.3.2.a.3 of the NRC Enforcement Policy. (VIO 05000395/2010004-01): "Failure to Notify the Commission of a Change in Medical Status"

## 1R12 Maintenance Effectiveness

### a. Inspection Scope

The inspectors evaluated two equipment issues described in the CRs listed below to verify the licensee's effectiveness with the corresponding preventive or corrective maintenance associated with structures, systems, and 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 the licensee's 10 CFR 50.65(a)(1) corrective action plans to determine if the licensee was identifying issues related to the MR at an appropriate threshold and that corrective actions were established and effective. The inspectors' review also evaluated if maintenance preventable functional failures (MPFFs) or other MR findings existed that the licensee had not identified.

The inspectors reviewed the licensee's controlling procedures, i.e., engineering services procedure (ES)-514, Rev. 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-10-00632, 'A' EDG cooling water leakage from jacket water pump seal
- CR-10-01427, emergency feedwater air supply relief valve XVR03541-EF failure

### b. Findings

No findings were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Control

### a. Inspection Scope

The inspectors evaluated, as appropriate, for the five selected work activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and, (4) that emergent work problems were adequately identified and resolved. The inspectors evaluated the licensee's work prioritization and risk characterization to determine, as appropriate, whether necessary steps were properly planned, controlled, and executed for the planned and emergent work activities.

- Work Week 2010-28: risk assessment for scheduled maintenance and testing on the 'A' SW pump, the 'A' SWBP, the 'A' MDEFW pump, 'B' instrument air compressor, and a reactor building entry
- Work Week 2010-34: risk assessment for scheduled maintenance for the annual overhaul/inspection of the 'B' chiller, 'B' chilled water pump preventive maintenance, 'C' CCW and 'C' CCW booster pump preventive maintenance, and emergent work to repair 'A' centrifugal charging pump lube oil leak
- Work Week 2010-38: risk assessment for scheduled maintenance for the replacement of the 'A' chiller, switchyard relay house replacement modification (yellow risk), diver inspections of the SW pond, 'B' SWBP and associated room cooling unit preventive maintenance, 'B' MDEFW pump and associated room cooling unit preventive maintenance, switchyard AC power Bus #3 de-energization and preventive maintenance (yellow risk), and 'B' reactor building spray pump electrical preventive maintenance
- Work Week 2010-39: risk assessment for scheduled maintenance for the switchyard relay house replacement modification (yellow risk), replacement of the 'A' chiller, safety-related transformer XTF005 relay testing, and plant shutdown/restart to investigate/repair reactor coolant pump motor oil leakage
- Work Week 2010-40: risk assessment for scheduled maintenance to replace the 'A' SW pump motor upper oil cooling coil (yellow risk), switchyard relay house replacement modification (yellow risk), pressurizer heater capacity testing, and 'A' MDEFW pump testing

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed four operability evaluations listed below, affecting risk significant mitigating systems to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred; (3) whether other existing degraded conditions were considered; (4) that the licensee considered other degraded conditions and their impact on compensatory measures for the condition being evaluated; and, (5) the impact on TS limiting conditions for operations and the risk significance in accordance with the significance determination process. Also, the inspectors verified that the operability evaluations were performed in accordance with station administrative procedure (SAP)-209, Revision 0E, "Operability Determination Process," and SAP-999, Rev. 4D, "Corrective Action Program."

- CR-04-03328, resolution of operator timeline and dose calculations for steam generator tube rupture
- CR-10-02845, Pressurizer safety valve open indication acoustic monitoring alarm received

- CR-10-03329, 'A' reactor building cooling unit service water return isolation valve, XVB03107A, exceeded its stroke time limit
- CR-10-03724, 'A' MDEFW pump inboard bearing temperature reached the high warning temperature indication on the plant computer

b. Findings

No findings were identified.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, UFSAR, or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed evaluations for nine changes and additional information, such as drawings, calculations, supporting analyses, the UFSAR, and TS, to confirm that the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The nine evaluations reviewed are listed in the Attachment.

The inspectors reviewed samples of changes for which the licensee had determined that evaluations were not required, to confirm that the licensee's conclusions to "screen out" these changes were correct and consistent with 10CFR50.59. The nineteen "screened out" changes reviewed are listed in the attachment.

The inspectors evaluated engineering design change packages for eight material, component, and design based modifications to evaluate the modifications for adverse effects on system availability, reliability, and functional capability. The eight modifications are as follows:

- ECR 50294, Setpoint Change for EDG Stator Temperature Alarm (ITY15472A&B)
- OSC 1875 Pressure Regulator 67 CFR Used in Instrument Air Supply Line
- ECR 50585B, Reroute of Service Water and Chilled Water Piping Interferences
- ECR 50704, Reactor Vessel Upflow Conversion
- ECR 50594, RMA0011 Recorder Replacement
- ECR 50649, MCC Breaker Replacement Modification
- ECR 50689, EDG Crankcase Pressure Switch Relocation
- ECR 50690, EDG Vacuum Switch Setpoint Input

Documents reviewed included procedures, engineering calculations, modification design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the UFSAR, supporting analyses, Technical Specifications, and design basis information. The inspectors additionally reviewed test documentation to ensure adequacy in scope and conclusion. The inspectors' review was also intended to

verify that all appropriate details were incorporated in licensing and design basis documents and associated plant procedures.

The inspectors also reviewed selected CRs and the licensee's recent self-assessment associated with modifications and screening/evaluation issues to confirm that problems were identified at an appropriate threshold, were entered into the corrective action process, and appropriate corrective actions had been initiated and tracked to completion.

b. Findings

No findings 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, Rev. 5A, "Post Maintenance Testing Guideline."

- WOs 0912896 and 1001534, PMT following preventive maintenance on 'A' MDEFW pump
- WOs 0910962 and 1002851, PMT following preventive maintenance on 'B' RHR pump
- WOs 0907000, 0911709, 1002332, and 1002336, PMT following preventive maintenance on 'C' charging pump
- WO 1009823, PMT for replacement of actuator for reactor building cooling unit service water return isolation valve XVB03107A
- WO 1000799, PMT following preventive maintenance on 'B' SWBP
- WOs 0517868, 0715857, 0715858, 1005816, 1005819, and 1005820, PMT following electrical switchgear work and protective relay calibration associated with emergency auxiliary transformers XTF-31 and XTF-32

b. Findings

No findings were identified.

## 1R20 Refueling and Other Outage Activities

### a. Inspection Scope

The inspectors performed the inspection activities described below for the scheduled short duration outage in Hot Standby (Mode 3) to investigate a low level alarm on the 'A' reactor coolant pump (RCP) motor upper oil reservoir and make subsequent oil leakage repairs. The outage began on September 23 and ended on September 25. Documents reviewed are listed in the attachment.

- The outage work plan was reviewed to ensure that appropriate risk controls, defense-in-depth, and TS requirements were considered in the configuration of important plant safety equipment, and outage personnel resource scheduling took into consideration fatigue management requirements
- The plant shutdown was observed to ensure that TS and licensee procedural requirements were met for controlling key safety functions and plant configuration changes, and that defense-in-depth was maintained commensurate with the licensee's outage risk control and reactivity management plans
- The inspectors reviewed and observed personnel containment entries to verify that the licensee controlled the entries and work activities in accordance with the appropriate TS and licensee procedural requirements for maintaining containment integrity, foreign material exclusion, security access, and radiological controls
- The inspectors conducted several containment building walkdowns during and following the completion of licensee work activities to ensure that there was not debris left in containment that might contribute to emergency core cooling system sump screen blockage
- The inspectors observed reactor restart, mode changes, and changing plant configurations to verify that TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites were met during these activities
- The inspectors reviewed various problems that arose during the outage to verify that the licensee was identifying problems related to outage activities at an appropriate threshold and entering them into the CAP

### b. Findings

No findings were identified.

1R22 Surveillance Testinga. Inspection Scope

The inspectors observed and/or reviewed the six surveillance test procedures (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-223.002A, Rev. 9D, "Service Water Pump Test" (for B train)

Reactor Coolant System Leakage Tests:

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

Other Surveillance Tests:

- STP-125.002B, Rev. 1I, "Diesel Generator B Operability Test"
- STP-105.006, Rev. 11E, "Safety Injection / Residual Heat Removal Monthly Flow Path Verification Test"
- STP-120.003, Rev. 8H, "Emergency Feedwater Monthly Valve Verification"
- EMP-190.053, Rev. 1A, "Test Procedure for Lock-Out Relays 86T4 and 86T5" (for 86T5 relay)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testinga. Inspection Scope

The inspector evaluated the adequacy of licensee's methods for testing the Alert and Notification System (ANS) 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 requirements, 10 CFR Part 50, Appendix E, Section IV.D, 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," Rev. 1, was also used as a reference.

The inspector reviewed various documents which are listed in the attachment. This inspection activity satisfied one inspection sample for the ANS on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Preparedness Organization Staffing and Augmentation System

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 requirements, 10 CFR 50, Appendix E, 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 were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, no change has been implemented to Rev. 58 of the Radiological Emergency Response Plan. The inspector conducted a sampling review of the implementing procedure changes made between October 1, 2009, and August 31, 2010 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, 10 CFR 50.47(b)(4), and its related requirements, 10 CFR 50, Appendix E, were used as reference criteria.



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

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses

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 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 requirements, 10 CFR 50, Appendix E, were used as reference criteria.

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

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to workers: During facility tours, the inspectors directly observed labeled radioactive material and postings for radiation areas and high radiation areas (HRAs) established within the radiologically controlled area (RCA). The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed and verified survey records for several plant areas including surveys for alpha emitters, airborne radioactivity, gamma surveys with a range of dose rate gradients. The inspectors also

discussed changes to plant operations with Radiation Protection (RP) supervisors that could contribute to changing radiological conditions since the last inspection. The inspectors attended a pre-job discussion and reviewed several radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for selected Locked High Radiation Area (LHRA) and Very High Radiation Area (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with RP supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool were reviewed and discussed. Established radiological controls (including airborne controls) were evaluated for selected tasks including work in auxiliary building HRAs, and radwaste processing and storage. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Occupational workers' adherence to selected RWPs and RP technician proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for reviewed RWPs.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors reviewed the last three cycles of calibration records for selected release point survey instruments and discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Problem Identification and Resolution: CRs associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure SAP-999, "Corrective Action Program," Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

RP activities were evaluated against the requirements of UFSAR Section 12; TS Sections 5.4 and 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. Documents reviewed are listed in Section 2RS1 of the attachment.

The inspectors completed all specified line-items detailed in IP 71124.01 (sample size of 1).

b. Findings

No findings were identified.

## 2RS4 Occupational Dose Assessment

### a. Inspection Scope

The inspectors evaluated current RP program activities and results associated with internal and external radiation exposure monitoring of occupational workers. The review included program guidance, equipment and changes, as applicable; quality assurance activities, results, and responses to identified issues; and individual dose results for occupational workers.

External Dosimetry: The inspectors reviewed and discussed RP program guidance for monitoring external and internal radiation exposures of occupational workers. The inspectors verified National Voluntary Laboratory Accreditation Program certification data and discussed program guidance for storage, processing and results for active and passive personnel dosimeters currently in use. Comparisons between direct reading dosimeter and thermoluminescent dosimeters (TLDs) data were reviewed and discussed.

Internal Dosimetry: Program guidance, instrument detection capabilities, and select results for the internally deposited radionuclides were reviewed in detail. The inspectors reviewed routine termination and follow-up *in vivo* [Whole Body Count (WBC)] analyses, as well as, *in vitro* bioassays conducted for tritium monitoring for divers in calendar year 2009. In addition, guidance for collection and conduct of special bioassay sampling were discussed in detail.

Special Dosimetric Situations: The inspectors reviewed monitoring conducted and results for special dosimetric situations. The methodology and results of monitoring occupational workers within non-uniform external dose fields were evaluated. In addition, the adequacy of dosimetry program guidance and its implementation were reviewed for shallow dose assessments and supporting calculations for three separate discrete radioactive particle skin contamination events which occurred during the previous refueling outage. The inspectors reviewed monitoring conducted, and results for selected declared pregnant workers documented in licensee records since January 1, 2009. In addition, proficiency of RP staff involved in conducting skin dose assessments, neutron monitoring, and WBC equipment operations were evaluated through direct interviews, onsite observations, and review and discussions of completed records and supporting data.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CRs associated with occupational dose assessment. The reviewed items included CRs, self-assessments, and quality assurance audit documents. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve identified issues in accordance with licensee procedure, SAP 999, "Corrective Action Program," Rev. 4.

RP program occupational dose assessment guidance and activities were evaluated against the requirements of the UFSAR Section 12; TS Sections 5.4 and 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Section 2RS4 of the attachment.

The inspectors completed all specified line-items detailed in IP 71124.04 (sample size of 1).

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Effluent Monitoring and Radwaste Equipment: During inspector walk-downs, accessible sections of the liquid and gaseous radioactive waste (radwaste) and effluent systems were assessed for material condition and conformance with system design diagrams. The inspection included floor drain tanks, liquid waste system piping, waste gas decay tanks, monitor tanks, liquid radwaste monitors, plant stack effluent monitors, and associated airborne effluent sample lines. The inspectors interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation.

The inspectors reviewed performance records and calibration results for selected radiation monitors, flowmeters, and air filtration systems. For effluent monitors RMA-0003 (main plant stack), RMA-0004 (reactor building purge exhaust), RMA-6 (fuel handling building exhaust) RML-0005 (liquid waste) and RML-8 (turbine building sump) the inspectors reviewed the last two calibration records. The last two surveillances on the high efficiency particulate filter (HEPA)/Charcoal air treatment systems also were reviewed. The inspectors evaluated out-of-service effluent monitors and compensatory action data for the period January 2009 - August 2010.

Installed configuration, material condition, operability, and reliability of selected effluent sampling and monitoring equipment were reviewed against details documented in the following: 10 CFR Part 20; RG 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials In Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants; American Nuclear Standards Institute (ANSI)-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; TS Section 5; the Offsite Dose Calculation Manual (ODCM); and UFSAR, Chapter 12. Procedures and records reviewed during the inspection are listed in Section 2RS6 of the attachment.

Effluent Release Processing and Quality Control Activities: The inspectors observed the weekly collection of liquid effluent samples from 'B' monitor tank and effluent samples from the turbine building (condensate polisher discharge). Chemistry technician proficiency in collecting, processing, and counting the samples, as well as preparing the applicable release permits were evaluated. The inspectors reviewed recent liquid and gaseous release permits including pre-release sampling results, effluent monitor set-points, and resultant doses to the public. The inspectors also reviewed the 2008 and 2009 annual effluent reports to evaluate reported doses to the public and to review ODCM changes. The inspectors reviewed daily quality control data logs and calibration records for instruments used to quantify effluent sample activity including High Purity

Germanium detectors and liquid scintillation counters. In addition, results of the 2008, and 2009 inter-laboratory cross-check program were reviewed.

Observed task evolutions, count room activities, and offsite dose results were evaluated against details and guidance documented in the following: 10 CFR Part 20 and Appendix I to 10 CFR Part 50; ODCM; RG 1.21; RG 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I; and TS Section 6. Procedures and records reviewed during the inspection are listed in Section 2RS6 of the attachment.

Problem Identification and Resolution: Selected CRs associated with effluent release activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve selected issues in accordance with procedure SAP-999, "Corrective Action Program," Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Reviewed documents are listed in Section 2RS6 of the attachment.

The inspectors completed one specified line-item sample as detailed in IP 71124.06 (sample size of 1).

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Implementation: The inspectors observed routine sample collection and surveillance activities as required by the licensee's environmental monitoring program in the ODCM. The inspectors evaluated the location and the material condition of five air sampling stations and eight environmental TLDs. The operability of air sampling stations was verified during the observation of the weekly airborne particulate filter and iodine cartridge changes.

Land use census results, changes to the ODCM, and sample collection/processing activities were discussed with environmental technicians and licensee staff. The inspectors reviewed calendar year, and current procedural guidance for environmental sample collection and processing.

Procedural guidance, program implementation, and environmental monitoring results were reviewed against: 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS Section 6.13 and 6.14, ODCM; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Documents reviewed are listed in Section 2RS7 of the attachment.

Meteorological Monitoring Program: During tours of the meteorological tower and local data collection equipment, the inspectors observed the physical condition of the tower and its instruments and discussed equipment operability and maintenance history with the responsible RP Supervisor. For the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed calibration records for applicable tower instrumentation and evaluated measurement data recovery.

Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR; ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites; and Safety Guide 23, Onsite Meteorological Programs. Documents reviewed are listed in Section 2RS7 of the attachment.

Problem Identification and Resolution: The inspectors reviewed selected CRs in the areas of environmental monitoring, meteorological monitoring, and release of materials. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with SAP-999, "Corrective Action Program," Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Documents reviewed are listed in section 2RS7 of the attachment.

The inspectors completed all specified line-item samples detailed in Inspection Procedure (IP) 71124.07 (sample size of 1).

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radioactive waste (radwaste) processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included radwaste storage tanks; resin transfer piping, resin and filter packaging components; and abandoned evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The 2009 Effluent Report and radionuclide characterizations from 2008 - 2010 for selected waste streams were reviewed and discussed with radwaste staff. For primary resin, reactor coolant system filters, and Dry Active Waste the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for resins and filters was evaluated and discussed with radwaste staff. The

inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's Process Control Program and UFSAR, Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position on Waste Classification (1983). Reviewed documents are listed in Section 2RS8 of the attachment.

Radioactive Material Storage: During walk-downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Radioactive material and waste storage activities were reviewed against the requirements of 10 CFR Part 20. Reviewed documents are listed in Section 2RS8 of the report attachment.

Transportation: There were no significant shipments during the week of inspection, however the inspectors did observe preparation activities for the shipment of an empty package previously used to ship radioactive material. The inspectors noted package markings and labeling, performed independent dose rate measurements, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations.

Selected shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for handling shipping containers were compared to Certificate of Compliance requirements and manufacturer recommendations. In addition, training records for selected individuals currently qualified to ship radioactive material were reviewed.

Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 71, 49 CFR Parts 172-178, as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed during the inspection are listed in Section 2RS8 of the attachment.

Problem Identification and Resolution: The inspectors reviewed CRs in the area of radwaste processing and transportation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure SAP-999, "Corrective Action Program," Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2RS8 of the attachment.

The inspectors completed one sample as required by IP 71124.08 (sample size of 1).

b. Findings

No findings 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 July 2009 through June 2010. The inspectors used the performance indicator definitions and guidance contained in NEI 99-02, Rev. 6, "Regulatory Assessment Performance Indicator Guideline," and licensee procedure SAP-1360, Rev. 1, "NRC and INPO/WANO Performance Indicators," to check the reporting of each data element. The inspectors sampled licensee event reports (LERs), operator logs, plant status reports, CRs, and performance indicator data sheets to verify that the licensee had properly reported the PI data. Also, the inspectors discussed the PI data with the licensee personnel associated with the performance indicator data collection and evaluation.

- Mitigating System Performance Index (MSPI) - Emergency AC Power System
- MSPI - High Pressure Safety Injection System
- MSPI - Residual Heat Removal System

b. Findings

No findings were identified.

.2 Cornerstone: Emergency Preparedness

a. Inspection Scope

The inspector sampled licensee submittals relative to the PIs listed below for the period October 1, 2009, and June 30, 2010. 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," Rev. 6, was used to confirm the reporting basis for each data element.



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

The inspection was conducted in accordance with NRC IP 71151, "Performance Indicator Verification." For the specified review period, the inspector examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspector verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspector 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 inspector verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspector also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the attachment.

This inspection activity satisfied one inspection sample each for the Drill/Exercise Performance, ERO Drill Participation, and Alert and Notification System as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Cornerstone: Occupational Radiation Safety

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported PI data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 6.

The inspectors reviewed PI data collected from January 1, 2009, through August 19, 2010, for the Occupational Exposure Control Effectiveness PI. For the reviewed period, the inspectors assessed CAP records to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and ED alarms for cumulative doses and/or dose rates exceeding established set-points. The reviewed documents relative to this PI are listed in Sections 2RS1 and 4OA1 of the attachment.

b. Findings

No findings were identified.

.4 Cornerstone: Public Radiation Safety

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported PI data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 6.

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from January 1, 2009, through August 19, 2010. For the assessment period, the inspectors reviewed cumulative and projected doses to the public, out-of-service effluent radiation monitors and compensatory sampling data, and selected CRs related to Radiological Effluent Technical Specifications/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in sections 2RS6 and 4OA1 of the attachment.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by either attending daily screening meetings that briefly discussed major CRs, or accessing the licensee's computerized corrective action database and reviewing each CR that was initiated.

b. Findings

No findings were identified.

.2 Annual Sample Review

a. Inspection Scope

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

- CR-09-05093, While energizing the new main generator transformer, a loss of all balance of plant (BOP) AC power occurred

The inspectors assessed whether the issue was properly identified; documented accurately and completely; properly classified and prioritized; adequately considered extent of condition, generic implications, common cause, and previous occurrences; adequately identified root causes/apparent causes; and identified appropriate and timely corrective actions. Also, the inspectors verified the issues were processed in accordance with procedure SAP-999, Rev. 4D, "Corrective Action Program."

b. Findings

The inspectors identified one weakness with the licensee's implementation of corrective actions associated with this CR. The CR documented the November 22, 2009, loss of all BOP AC power and resulting fires in the three BOP incoming switchgear breaker cubicles due to the failure to remove personnel protection ground devices from the switchgear prior to energizing the transformer. The NRC previously documented a NCV in Integrated Inspection Report 05000395/20100003 regarding the failure to properly control grounding equipment that resulted in the event. The corrective action weakness identified during review of CR-09-05093 involved the inadvertent closure of Action #2 which was to perform in the next 5 to 6 years, an Electric Power Research Institute (EPRI) recommended follow-up visual tactile examination of the jacket on the electrical cable above the switchgear that was not replaced, however, had been in the arc flash zone in order to assess potential hardening of the cable jacket. Due to an apparent misunderstanding regarding the origin and intent of this action, the electrical maintenance personnel who were assigned this action, closed it based on the completion of the original switchgear repairs conducted in November 2009. Since this was the only formal tracking mechanism for completing the EPRI recommendation, the inspectors believed that there was a good probability that this examination would have been missed. The licensee initiated CR-10-02930 and CR-10-03043 to address this issue which included plans to create new action requirements to schedule the cable examinations at the EPRI recommended timeframe. Based on subsequent clarification from EPRI on the basis for the recommended examination, it was determined that had the examinations not been performed there would have been no actual safety consequence. Specifically, subsequent age related hardening of the cable jacket, even if it were to occur, would not result in any cable reliability concerns since the core cable insulation had been undamaged from the fire event. Based on this, the inspectors determined that the human error in closing the CR action item was of minor significance.

4OA3 Event Followup

(Closed) LER 05000395/2010001-00: Reactor Building Cooling Units Reduced Air Flow Below Technical Specification Limits

The inspectors reviewed the subject LER and applicable condition reports (CR-09-05126 and CR-10-01783) associated with the issue to verify the LER accuracy and appropriateness of the specified corrective actions. The cause of this event was the use of a non-conservative filtration area factor for calculation of the reactor building cooling unit (RBCU) air flow rate resulting in air flow rates slightly below the TS range between Refuel 16 and 18. The licensee replaced the filters and corrected the filtration area factor prior to the end of the Refuel 18. The enforcement aspects of this finding are

discussed in Section 4OA7. No other 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 were identified.

##### .2 (Closed) Temporary Instruction (TI) 2515/179 Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System (NSTS) Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)

###### a. Inspection Scope

The inspectors performed the TI concurrent with IP 71124.01 Radiation Hazard Analysis. The inspectors reviewed the licensee's source inventory records and identified the sources that met the criteria for reporting to the NSTS. The inspectors visually identified the sources contained in various calibration systems and verified the presence of the source by direct radiation measurement using a calibrated portable radiation detection survey instrument. The inspectors reviewed the physical condition of the irradiation devices to include documented source leak checks as appropriate. The inspectors reviewed the licensee's procedures for source receipt, maintenance, transfer, reporting and disposal. The inspectors reviewed documentation that was used to report the sources to the NSTS. Documents reviewed are listed in sections 2RS1 of the attachment.

###### b. Findings

No findings were identified.

#### 4OA6 Meetings, Including Exit

##### .1 Quarterly Resident Inspector Exit Meeting

On October 14, 2010, the resident inspectors presented the integrated inspection results to Mr. Thomas Gatlin and other members of the licensee staff. The licensee acknowledged the results of these inspections. The inspectors confirmed that inspection activities discussed in this report did not contain proprietary material.

##### .2 Triennial Heat Sink Performance Inspection Exit Meeting

An exit meeting was conducted on August 6, 2010, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was retained during this inspection.

##### .3 Annual Public and Occupational Radiation Safety Inspection Exit Meeting

An exit meeting was conducted on August 20, 2010, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was retained during this inspection.

##### .4 Biennial Licensed Operator Regualification Inspection Exit Meeting

An exit meeting was conducted on August 26, 2010, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was retained during this inspection.

##### .5 Triennial Permanent Plant Modification/10CFR50.59 Inspection Exit Meeting

An exit meeting was conducted on August 27, 2010, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was retained during this inspection.

##### .6 Annual Emergency Preparedness Inspection Exit Meeting

An exit meeting was conducted on September 16, 2010, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was retained during this inspection.

#### 4OA7 Licensee-Identified Violations

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

- TS 3.6.2.3, Reactor Building Cooling System, and TS 3.6.3, Particulate Iodine Cleanup System, requires, in part, that two independent groups of RBCUs and their associated high efficiency particulate air (HEPA) filter banks shall be operable in

Modes 1-4. Contrary to this, due to the use of a non-conservative HEPA filter filtration area factor in the calculation of air flow rates, on April 28, 2010, the licensee identified that RBCUs XAA0001A and XAA0002A had air flow rates slightly below the TS range required for operability between Refuel 16 and 18, and RBCUs XAA0001B and XAA0002B had air flow rates slightly below the TS range for operability between Refuel 16 and 17. The violation was determined to be of very low safety significance because the RBCUs remained capable of performing their design functions with the slight reduction in air flow rates. The licensee replaced the filters and corrected the filtration area factor prior to the end of Refuel 18. The licensee addressed this issue in their corrective action program as CR-09-05126 and CR-10-01783.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

J. Archie, Senior Vice President, Nuclear Operations  
A. Barbee, Director, Nuclear Training  
L. Bennett, Manager, Plant Support Engineering  
L. Blue, Manager, Nuclear Training  
M. Browne, Manager, Quality Systems  
M. Coleman, Manager, Health Physics and Safety Services  
G. Douglass, Manager, Nuclear Protection Services  
M. Fowlkes, General Manager, Engineering Services  
D. Gatlin, Vice President, Nuclear Operations  
R. Haselden, General Manager, Organizational / Development Effectiveness  
R. Justice, Manager, Nuclear Operations  
G. Lippard, General Manager, Nuclear Plant Operations  
M. Mosley, Manager, Chemistry Services  
D. Shue, Manager, Maintenance Services  
W. Stuart, Manager, Design Engineering  
B. Thompson, Manager, Nuclear Licensing  
R. Williamson, Manager, Emergency Planning  
S. Zarandi, General Manager, Nuclear Support Services

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

#### **Opened**

05000395/2010004-01	VIO	Failure to Notify the Commission of a Change in Medical Status (Section 1R11.2)
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#### **Closed**

05000395/2010001-00	LER	Reactor Building Cooling Units Reduced Air Flow Below TS Limits (Section 4OA3.1)
05000395/2515/179	TI	Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System (NSTS) Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207) (Section 4OA5.2)

## LIST OF DOCUMENTS REVIEWED

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

#### Procedures and Documents

D-302-221, Service Water Cooling, Rev. 27  
D-302-222, Service Water Cooling; B-Train Cooling to RBCU Loop, Rev. 0  
SOP-117, Service Water System, Rev. 21E  
SOP-118, Component Cooling Water System, Rev. 17F  
SOP-211, Emergency Feedwater System, Rev. 13B

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

#### Procedures and Drawings

SOP-117, Service Water System, Rev. 21E  
SOP-118, Component Cooling Water System, Rev. 17F  
SOP-211, Emergency Feedwater System, Rev. 13B  
D-302-221, Service Water Cooling, Rev. 27  
D-302-222, Service Water Cooling B-Train Cooling to RBCU Loop, Rev. 0

### **Section R07: Heat Sink Performance (HS) Activities**

#### Procedures

ES-560.211, Service Water System Heat Exchanger Performance, Rev. 9  
ES-505, Service Water System Corrosion Monitoring and Control Program, Rev. 1  
STP-230.007, RHR Pump and Check Valve Full Flow Test, Rev. 3  
STP-250.007, Service Water System Leakage Test outside Reactor Building, Rev. 5  
STP-223.002A, Service Water Pump Test, Rev. 9  
STP-230.006J, Service Water System Refuel Frequency Testing, Rev. 5  
PTP-213.006, Service Water System Flow and Pressure Verification, Rev. 0  
SAP-0157, Maintenance Rule Program, Rev. 1  
SAP-1257, Heat Exchanger Program, Rev. 0  
OAP-106.1, Operating Rounds, Rev. 15  
MMP-255.001, General Heat Exchangers Cleaning and Tube Plugging, Rev. 13  
SOP-117, Service Water System, Rev. 21  
ES-0400, Service Water Pond Structure and Dam Inspections, Rev. 3  
SAP-0156, License Renewal Management Program, Rev. 0  
AOP-117.1, Loss of Service Water, Rev. 3  
AOP-118.1, Total Loss of Component Cooling Water, Rev. 2  
ICP-400.002, Service Water Pond Water Level ILT04458 Calibration, Rev. 5  
CP-614, Reactor Coolant Chemistry Control, Rev. 15  
CP-913, Service Water Biocide Treatment Equipment Operation, Rev. 12  
CP-923, Service Water Chemical Addition Program, Rev. 2  
CP-632, Chemistry Control of Auxiliary Systems, Rev. 5  
CP-622, Inspection for Corbicula sp, Mytilus sp., Rev. 4

#### Corrective Action Documents

CR-10-03129, NRC identified observation of CCW heat exchanger support requiring external visual examination for corrosion for through wall leak, dated August 6, 2010  
CR-10-03130, NRC identified observations during heat sink inspection, dated August 6, 2010  
CR-10-03091, Evaluation of DC04330-061 RHR calc, dated August 4, 2010  
CR-10-02055, Intercooler heat exchanger tube partially blocking, dated May 19, 2010



CR-10-02346, RHR heat exchanger design assumptions for heat transfer, flow limitations, dated August 2, 2010  
 CR-10-00045, stroke time evaluation, dated Feb 3, 2010  
 CR-09-05549, NEI-Buried piping integrity initiative, dated December 15, 2009  
 CR-09-04757, SW piping replacement for corrosion, dated November 9, 2009  
 CR-09-04442, UT thickness measurements is close to minimum allowed wall thickness, dated October 30, 2009  
 CR-09-01644, NRC and FERC Dam inspection follow up, dated April 23, 2009  
 CR-09-03045, heat transfer rate of B CCW would fall below design basis limit, dated August 5, 2009  
 CR-06-01091, Intercooler Heat Exchanger does not meet design basis limiting conditions due to apparent fouling on the shell side of the component, dated 2006  
 CR-05-04023, Through wall leak on SW booster pump recirculation line, dated October 27, 2005  
 CR-05-01588, Eddy Current Examination reveals multiple pit like indications in ten of the B intercooler heat exchanger tubes, dated May 1, 2005

#### Others

LER 20009-003-00, Potential Loss of RHR safety function due to an unanalyzed condition, 6/28/10  
 Work Order #0410528-003, Repair/Rebuild Travelling Screen, dated February 17, 2006  
 Calculation #DC04330-061, RHR heat transfer, Rev. 4, dated October 9, 2004  
 Docket #50/395, UFSAR report, dated June 8, 2010  
 Letter #APC 09-53, NEI Buried Piping Integrity Initiative, dated November 24, 2009  
 DBD, Service Water System, Rev. 11, dated March 9, 2009  
 DBD, Component Cooling Water, Rev. 12, dated September 22, 2009  
 Drawing #D-302-221, System Flow Diagram of Service Water System, Rev. 27  
 Drawing #D-302-611, System Flow Diagram of Component Cooling, Rev. 38  
 Drawing #E-036-001, Plant layout, Rev. 61  
 FERC Dam Safety Report, dated April 22, 2009  
 Report #PR-37-36, CCW-B Eddy Current Testing, dated November 9, 2009  
 Report #PR-37-32, Diesel Generator-A Intercooler, dated May 15, 2008  
 System health reports for RHR, CCW, EDG heat exchangers, SW, GL89-13, dated 2010  
 Calculations #DC03650-013, Service Water Intake Structure 2009 Divers Inspection, dated June 10, 2010  
 Technical Work Record #DK17762, SW Cross Connect Line Inspection and Service Water Pump House Structure, dated April 22, 2010  
 Report, Service Water Pond and Dam Structures Visual Inspection, dated November 25, 2009  
 Job #051685, Thermal Performance Test Report of RBCU, dated May 21, 2010  
 Technical Work Record #BB41102, SW UT Inspection-18, dated November 10, 2009  
 Response to Generic Letter (GL) 89-13, dated January 31, 1990  
 Report on GL89-13 self assessment, dated March 30-April 2, 2009  
 Calculation #DC05600-047, SW piping from RBCU-B determination of water hammer forces  
 Report #TR-2230-014, Service Water Pond Thermal Study, Revision 0, dated June 27, 2000  
 Report #TR07010-001, RBCU Coil performance Analysis, dated July 2, 2002  
 Task #0901420-001, Bay Water level instrument signoff sheet, dated August 17, 2009

**Section 1R11: Licensed Operator Requalification Program****Records:**

Resumption of Active NRC License Qualification Reactivation Packages (seven records reviewed)

Medical Files (14 records reviewed)

Remedial Training Records (one record reviewed)

Remedial Training Examinations (one exam reviewed)

Simulator Discrepancy List, dated July, 2010

VC Summer Licensed Restriction Report, OLTS Report 14, Dated 07/27/2010

VC Summer Renewal Tracking Report, OLTS Report 17, Dated 07/27/2010

**Written Examinations:**

LOR – 07 – 11 – C – RO%

LOR – 07 – 11 – C – SRO%

LOR – CRO – RETAKE

LOR – 07 – 11 – A – SRO%

LOR – 07 – 11 – E – RO%

LOR – 07 – 11 – E – SRO%

**Procedures:**

TQP-408, Development and Administration of Licensed Operator Annual Requalification Examinations)

TQP-804, Licensed Operator Requalification (LOR) Program, Rev. 0

OAP-110.2, Operator Watchstanding Certification and Tracking

**Evaluations and Self Assessments:**

Operating Curricula Review Committee Minutes, Dated 02/11/2009

Operating Curricula Review Committee Minutes, Dated 03/04/2010

Operating Curricula Review Committee Minutes, Dated 05/27/2009

Operating Curricula Review Committee Minutes, Dated 05/20/2010

Operating Curricula Review Committee Minutes, Dated 09/22/2008

Operating Curricula Review Committee Minutes, Dated 09/11/2009

Operating Curricula Review Committee Minutes, Dated 12/03/2008

Operating Curricula Review Committee Minutes, Dated 01/28/2008

CR-05-03172, CR-2008-03766, CR-10-03348, all documented licensed operator medical record deficiencies

Various condition reports over the last two years related to licensed operator on shift performance

Various closed condition reports that were simulator related

**Core Validation Tests:**

Transient Test: IST-7.2, Simultaneous Trip of All RCPs, Rev. 13 dated 05/06/2008. Tests performed 06/19/2008 and 12/08/2009.

IST-7.8, Simultaneous Trip of All Feedwater Pumps, Rev. 14 dated 08/06/2008. Tests performed 06/26/2008 and 12/10/2009.

Simulator Steady State Tests:

Steady-State Test: IST-4.1, 100% Power Steady State Accuracy Test, Rev. 22 dated 07/16/2008. Tests performed 07/22/2008 and 12/16/2009.

Steady-State Test: IST-4.2, 75% Power Steady State Accuracy Test, Rev. 20 dated 07/22/2008. Tests performed 07/23/2008 and 12/16/2009.

Steady-State Test: IST-4.1, 25% Power Steady State Accuracy Test, Rev. 6 dated 07/22/2008. Tests performed 07/24/2008 and 12/16/2009.

Standards:

ANSI/ANS-3.5-1985, American National Standard Nuclear Power Plant Simulators for Use In Operator Training and Examination

ANSI/ANS-3.4-1983, Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants

Event vs. Simulator Comparison:

Malfunction Test: IST-6.1.1.9, Loss of Instrument Air, Rev. 8 dated 10/02/2006. Test performed 05/08/2007.

Malfunction Test: IST-6.3.1, Loss of Condenser Vacuum, Rev. 5 dated 01/21/2004. Test performed 05/08/2007.

Malfunction Test: IST-6.12.10, RCS Fuel Leak, Rev. 5 dated 04/19/2004. Test performed 05/31/2006.

Simulator Scenario Packages:

Simulator Scenario: LOR-SA-044R

Simulator Scenario: LOR-SA-070R

Simulator Scenario: LOR-SA-085R

Simulator Scenario: LOP-SA-038R

Simulator Scenario: LOR-SA-033R

Simulator Scenario: LOR-SA-044R

JPM Packages:

JPS-087, Classify Emergency

JPSF-046, Transfer In-Service Charging Pump

JPS-080, Classify Emergency

JPSF-003, Emergency Borate

JPS-154, Classify Emergency

JPA-002A, Calculate Boron Concentration

JPS-095, Monitor Critical Safety Functions

JPS-144, Classify Emergency

JPSF-045, Ensure Containment Isolation

JPS-001, Isolate "C" Steam Generator

JPSF-004, Respond to Reactor Trip

JPS-069, Shift CCW to Fast Speed in the Active Loop

JPSF-005, Transfer to Cold Leg Recirculation

JPP-402, Locally Dilute the Boric Acid Tanks, revision 4 dated 06/27/2007.

JPPF-167B, Establish Demineralized Water Alternate Cooling to Charging Pumps (Failure of Chilled Water Supply)

## **Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications**

### Full Evaluations

ECR 50692, Piping Connections for Implementation of Security Rule Section B5b, Rev. A  
 EOP 2.1, Post-LOCA Cooldown and Depressurization, Rev. 13  
 EOP 4.3, SGTR with Loss of Reactor Coolant: Saturated Recovery, Rev. 15  
 ECR 50613, XFL-8A/8B Vent and Drain Valves Replacement (RCP Seal Injection Filters)  
 ECR 50613, RCP Seal Injection Filter Housing Vent and Drain, Rev. 0  
 ECR 50567, SW Vacuum Relief Valves and Replacement of XVG03107a/B-SW, Rev. F  
 ECR 50294, Setpoint Change for DG Stator Temperature Alarm (ITY15472A&B)  
 ECR 50556E, Major Revision - Appendix R Emergency Lighting Upgrades  
 ETBT/ECR 71050 – Replacement Pigtail Connector for Barton Model 763, 763A and 764 Transmitters  
 ECR 50704A/B, Reactor Vessel Upflow Conversion 10CFR50.59 Review

### Screened Out Items

ECR 50679, Seismic Qualification of Control Room Toilet Exhaust Duct, Rev. 0  
 ECR 50723, Generic Letter 08-01 Vent Line Additions, Rev. 0  
 EOP 17.0, Response to High Reactor Building Pressure, Rev. 10  
 EOP 6.0, Loss of All ESF AC Power, Rev.21  
 EOP 1.1, Reactor Trip Recovery, Rev. 15  
 EOP 1.0, Reactor Trip Safety Injection Actuation, Rev. 21  
 ECR 50735, RMG0018 Cable Replacement (Signal and High Voltage)  
 ETBT 70549 – Equal to or Better Than Component Air Supply Filter Regulators  
 ECR 50466A/B, Additional Design to Replace DG Governor  
 ECR 50585B, Reroute of Service Water and Chilled Water Piping Interferences  
 ECR 50726, Seismic Qualification of XAH0048 I&C Air Handling Unit  
 ECR 50636, Structural Weld Overlay of Pressurizer Surge Line  
 ECR 70726, Setpoint Database Revision for IPS05304-SO, Rev. 0  
 ECR 50649, MCC Breaker Replacement Modification, Rev. 2  
 ECR 50689, DG Crankcase Pressure Switch Relocation, Rev. 0  
 ECR 50690, DG Vacuum Switch Setpoint Input, Rev. 0  
 ECR 50742, Relocation of Parr Line #2, Rev. 0  
 ECR 50495D, Main Power Transformer Replacement, Rev. 0  
 ECR 50594, RMA0011 Recorder Replacement, Rev. 0

### Modifications

ECR 50294, Setpoint Change for DG Stator Temperature Alarm (ITY15472A&B)  
 On-Site Certification (OSC) – 1875 Pressure Regulator 67 CFR Used in Instrument Air Supply Line  
 ECR 50585B, Reroute of Service Water and Chilled Water Piping Interferences  
 ECR 50704, Reactor Vessel Upflow Conversion  
 ECR 50594, RMA0011 Recorder Replacement, Rev. 0  
 ECR 50649, MCC Breaker Replacement Modification, Rev. 2  
 ECR 50689, DG Crankcase Pressure Switch Relocation, Rev. 0  
 ECR 50690, DG Vacuum Switch Setpoint Input, Rev. 0

Condition Reports

06-00904, Control room toilet and kitchen exhaust filter  
 09-02748, Self Assessment (SA09-MP-02)  
 06-01969, NRC Information Notice 2006-14 & Prime Nuclear Industry Advisory  
 06-03838, NRC Information Notice 2006-14, Supp. 1  
 06-02243, Spare transmitter connector assemblies found defective per CER-06-1969  
 07-00572, Diesel generator stator temperature relay not wired per design and not operable  
 01-01839, NCV Inspection Report 01-09-02 identifies 1 NCV for inadequate lighting  
 05-02177, IPS05304 will not meet the required setpoint for the reset of switch  
 04-01794, XFN0075A, DG Area A Vent Air Supply Fan A - breaker found tripped  
 07-00629, XFN0075A tripped on autostart

Procedures

50.59 Resource Manual, Rev. 2  
 ES-322, On-site Certification, Rev. 7  
 SAP-0107, 10CFR50.59 Review Process, Rev. 5  
 SAP-207A, Development of Emergency Operating Procedures, Rev. 4  
 ICP-300.052, Instrument Control Procedure Coaxial and Triaxial Connectors, Rev. 7  
 SAP-603, Control Room Envelope Habitability Program, Rev. 1  
 CMP-600.002, Installation and Repair of Dow Corning 3-6548 RTV Silicone Foam for Penetration Seals, Rev. 8  
 ICP-180.002, Emergency Diesel Generator A, Rev. 10  
 ARP-004-XCX-5201, Diesel Generator A Annunciator Response Procedure, Rev. 6  
 CMP-100.003, attachment III, Drywall Penetration Installation/Repair Checklist, Rev. 8  
 PTP-114.005, attachment I, FPER 8 Hour Emergency Light Units Test Data Sheet, Rev. 14  
 ES-455, Engineering Services Procedure, Plant Modification, Rev. 5  
 EMO-280.016, Molded Case Circuit Breaker Set Point and Specifications, Rev. 4

Completed Work Orders

WO-0915381-001, RG 1.97 CAT. 1 for Replacement of C-101 and FL-101, dated 12/05/09  
 WO 0814004, Task 001, Calibration of Instrument IPS05304, dated 10/30/09  
 WO 0706262, Task 001, Calibration of Instrument IPS05304, dated 05/06/08  
 WO 1004909, Pre Test Molded Circuit Breakers for XPP0043A-CS, dated 08/04/10  
 WO 1004911, Breaker and Overload Replacement for XFN0046A-M-VL, dated 08/04/10  
 WO 0909158, Replace Recorder per ECR 50594 and Perform Calibration Test, dated 06/16/10  
 WO 0811689, Diesel Generator A Instrument Calibration, dated 10/23/07  
 WO 0715663, Diesel Generator A Instrument Calibration, dated 01/15/08  
 WO 0805650, Diesel Generator A Instrument Calibration, dated 07/01/08  
 WO 0811689, Diesel Generator A Instrument Calibration, dated 06/02/09  
 WO 0907411, Diesel Generator A Instrument Calibration, dated 08/25/09  
 WO 0911454, Diesel Generator A Instrument Calibration, dated 05/03/10  
 WO 0805920, Diesel Generator B Instrument Calibration, dated 07/15/08  
 WO 0812675, Diesel Generator B Instrument Calibration, dated 03/24/09  
 WO 0904279, Diesel Generator B Instrument Calibration, dated 06/16/09  
 WO 0612439, Replace Vacuum Pressure Switch for DG, dated 01/23/07  
 WO 0614377, Remove Pressure Sensing Line at Engine Connection and Blow Air to Clear the Line, dated 02/13/07

WO 0709442, Calibrate Switch and Drain Sensing Tube, dated 08/27/07  
 WO 1003753, Instrument Calibration ILI054250 & ILS05425 is Calibrated in a Separate Task  
 Sheet, 05/18/10

#### Calculations

DC00110-016, Environmental Evaluation of Fisher Model 67FR Pressure Regulators, Rev. 1  
 DC08240-003, 480V System Protection, Rev. 5  
 DC08040-013, 480V MCC Magnetic Only Molded Case Circuit Breaker Trip Points, Rev. 4

#### Drawings

E-302-675, FSAR Figure 9.3-16, Sheet 3, Rev. 29  
 B-817-042, Control Air Signal Tubing Diagram, Rev. 11  
 Drawing, E-302-675, FSAR Figure 9.3-16, Sheet 3, Rev. 29  
 Drawing, B-201-358, Motor Control Center Unit Listing XMCI DA2X, Sheet 1, Rev. 9A  
 Drawing, B-201-358, Motor Control Center Unit Listing XMCI DA2X, Sheet 3, Rev. 7A  
 Drawing, B-201-358, Motor Control Center Unit Listing XMCI DA2X, Sheet 4, Rev. 8A  
 Drawing, B-201-358, Motor Control Center Unit Listing XMCI DA2X, Sheet 5, Rev. 4A  
 Drawing, B-201-359, Motor Control Center Unit Listing XMCI DA2Y, Sheet 1, Rev. 10A  
 Drawing, B-201-359, Motor Control Center Unit Listing XMCI DA2Y, Sheet 3, Rev. 11A  
 Drawing, B-201-359, Motor Control Center Unit Listing XMCI DA2Y, Sheet 5, Rev. 9A  
 Drawing, B-201-360, Motor Control Center Unit Listing XMCI DA2Z, Sheet 1, Rev. 7A  
 Drawing, B-201-360, Motor Control Center Unit Listing XMCI DA2Z, Sheet 2, Rev. 6A  
 Drawing, B-201-361, Motor Control Center Unit Listing XMCI DB2X, Sheet 1, Rev. 9A  
 Drawing, B-201-361, Motor Control Center Unit Listing XMCI DB2X, Sheet 2, Rev. 9A  
 Drawing, B-201-362, Motor Control Center Unit Listing XMCI DB2Y, Sheet 4, Rev. 12A  
 Drawing, B-201-362, Motor Control Center Unit Listing XMCI DB2Y, Sheet 6, Rev. 10A  
 Drawing, B-201-362, Motor Control Center Unit Listing XMCI DB2Y, Sheet 7, Rev. 11A  
 Drawing, B-201-362, Motor Control Center Unit Listing XMCI DB2Y, Sheet 8, Rev. 3A  
 Drawing, B-201-362, Motor Control Center Unit Listing XMCI DB2Y, Sheet 3, Rev. 6A  
 Drawing, B-201-363, Motor Control Center Unit Listing XMCI DB2Z, Sheet 1, Rev. 12A  
 Drawing, B-201-364, Motor Control Center Unit Listing XMCI EA1X, Sheet 1, Rev. 11A  
 Drawing, B-201-365, Motor Control Center Unit Listing XMCI EBIX, Sheet 1, Rev. 11A  
 Drawing, B-201-365, Motor Control Center Unit Listing XMCI EBIX, Sheet 2, Rev. 5A  
 Drawing, B-201-366, Motor Control Center Unit Listing XMCI ECIX, Sheet 1, Rev. 5A  
 Drawing, E-229-001, 230KV Substation Arrangement, Rev 10

#### Other Documents

SLTP-A100103 Data Sheet, dated 04/13/2010  
 Design Engineering Modification Interface Review, dated June 18 – 22, 2007  
 EPRI CGI Joint Utility Task Group Commercial Grade Item Evaluation for Pressure Regulators,  
 Single State, Rev. 0  
 Equipment Qualification Database Environmental Zone Information for IB-03A (IFV 02030)  
 EPRI Plant Support Engineering: Elastomer Handbook for Nuclear Power Plants  
 NU – 02SR725457, Purchase Order for PR# 649631, 67 CFR Nitrile Pressure Regulator  
 Form 5469, Instruction Manual for 67C Series Instrument Supply Regulators  
 Information Notice 2006-14 Supplement 1, Potentially Defective External Lead-Wire  
 Connections in Barton Pressure Transmitters  
 NU-02SR732350, Purchase Order for Electrical Connector, Disconnect

Scientech, EGS, Certificate of Compliance for Quick Disconnect Connector, Barton Style  
WCAP-16976, Design Report for Reactor Internals Upflow Conversion Plug for VC Summer,  
Rev 0

WCAP-16980-P, Reactor Internals Upflow Conversion Program Engineering Report, VC  
Summer Nuclear Station Unit 1, Rev 1

WCAP-9119, Vol. 2, Addendum 1, Structural Analysis of Reactor Coolant Loop for VCSNS Vol  
2, Analysis of the Primary Equipment Supports, Addenda for Upflow Conversion, Rev 6,  
Mar 2010,

LTR-R1DA-09-205, VC Summer Upflow Conversion-Evaluation of Irregularity in Top Former  
Flow Holes

RC-07-0085, Relief Request for Structural Weld Overlay of Pressurizer Surge Line  
Bulletin IN-94A, Series BB-200 Differential Pressure Switches Installation & Operation  
Instructions, Rev. 0

V.C. Summer Bus Tie Breaker Failure: Comparison of Solution Alternatives, 09/18/2008

GS-12, Switchyard and Substation Course Handout, Rev. 12

EE-03, Electrical Protective Device Setting Coordination, Rev. 1

WO-0717728-001, RG 1.97 CAT. 1 for Replacement of C-101 and FL-101

#### Condition Reports Written as a Result of the Inspection

CR 10-03186, 3 EOPs did not have 50.59 Applicability Determinations/Screenings Performed

CR 10-03389, Coordination Interval Between the Calculated Asymmetrical Curve and the  
MCCB Time-Current Curve

CR 10-03373, Preventative Maintenance on Valve

CR 10-03391, EOP 50.59 Reviews/Evaluations

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

##### Procedures

GOP-4C, Rapid Power Reduction, Rev. 0A

GOP-5, Reactor Shutdown from Startup to Hot Standby (Mode 2 to Mode 3), Rev. 11E

GOP-3, Reactor Startup from Hot Standby to Startup (Mode 3 to Mode 2), Rev. 13A

GOP-4A, Power Operation (Mode 1 – Ascending), Rev. 1D

EMP-295.007, RCP Motor Oil Level and Alarm Check, Rev. 3C

REP-109.002, Inverse Count Rate Ratio Plot, Rev. 10

STP-109.001, Reactor Building Closeout Inspection, 9F

STP-134.001, Shutdown Margin Verification, 12D

SOP-510, Water Treatment/Plant System Interface Valve Operation, Rev. 2C

#### **Section 1EP2: Alert and Notification System Testing**

##### Procedures

EPP-021, Activation of the Early Warning System, Rev. 22

EPMP-100, Maintenance of the Early Warning System, Rev. 1

Federal Signal Corporation's Model DCFCTB, Installation, Operation and Service Manual

##### Records and Data

Early Warning Siren System Silent Test results from inspection period

Early Warning Siren System Quarterly Test results from inspection period

Early Warning Siren System Annual Test results from inspection period

Special Needs Consideration List

**Section 1EP3: Emergency Preparedness Organization Staffing and Augmentation System**

Procedures

EPMP-101, Operation of the Dialogic Communicator, Rev. 0  
EPP-102, Emergency Plan Training, Rev. 5  
EPP-105, Conduct of Drills and Exercises, Rev. 8

Records and Data

04/16/2009 After Hours Beeper Drill  
07/28/2010 After Hours Beeper Drill  
08/23/08 Augmentation Drill Critique

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

Procedures

SAP-0127, Emergency Preparedness, Rev. 1

Records and Change Packages

EPP-001.2, Alert, Rev. 8  
EPP-002, Communication and Notification, Rev. 35  
EPP-005, Offsite Dose Calculation, Rev. 20  
EPP-012, Onsite Personnel Accountability and Evacuation, Rev. 12  
EPP-021, Activation of the Early Warning Siren System (EWSS), Rev. 22  
EPP-023, Technical Support Center, Rev. 17

**Section 1EP5: Correction of Emergency Preparedness Weaknesses**

Procedures

SAP-0999, Corrective Action Program, Rev. 5  
SAP-1350, V. C. Summer Nuclear Station Assessment Program, Rev. 5

Audits and Self-Assessments

SA10-EP-01 Self Assessment  
SA10-EP-02 Self Assessment  
SA09-EP-01 Self Assessment  
QA-AUD-201006-0 QA Audit  
QA-AUD-200903-0 QA Audit  
11/12/08 Training Drill Critique  
03/04/09 Training Drill Critique  
05/14/09 Training Drill Critique  
05/21/10 Exercise Critique  
10/02/09 Training Drill Critique  
10/16/09 Training Drill Critique  
03/24/10 Training Drill Critique  
05/26/10 Training Drill Critique  
07/21/10 Training Drill Critique

Condition Reports (CRs)

CR-10-03652, augmentation blanks and 50.54(q) quality  
CR-10-03589, 10 CFR 50.54(t) audit exceeding 365 days



CR-10-03573, incorrect ERO PI  
 CR-10-03420, scenarios not varying enough over the last six drills  
 CR-10-02939, TSC accountability issue  
 CR-10-01761, DEP PI decrease  
 CR-10-01710, EOF late activation  
 CR-10-01702, inaccurate notification  
 CR-10-01701, inaccurate notification  
 CR-10-01669, inaccurate notification  
 CR-10-01553, back up ERO augmentation and notification  
 CR-10-00131, ANS PI decrease  
 CR-10-00130, ERO PI decrease  
 CR-10-00090, OE evaluation on scenario similarities  
 CR-09-03896, incorrect DEP PI  
 CR-09-03871, incorrect ERO PI  
 CR-09-01188, offsite dose assessment improper qualification requirement  
 CR-09-00457, offsite dose assessment change with change management  
 CR-09-00134, offsite manual dose calculation lack of training

### **Section 2RS1: Radiological Hazard Assessment and Exposure Controls**

#### Procedures, Guidance Documents, and Manuals

SAP-0999A, Performance Improvement, Rev. 0  
 SAP-1350 attachment VIII, Snapshot Self-Assessment Plan/Report: Daily Response Check of Whole Body Contamination Monitors, 04/05/10 - 04/12/10 #SA10-HP-01S  
 SAP-1350 attachment II, Formal Self-Assessment Report: Health Physics Instrumentation and Calibration Lab, 8/25/08-9/03/10 #SA08-HP-01 Rev. 1  
 HPP-410, Health Physics Routine Surveys, Rev. 8  
 HPP-0402, Radiological Survey Requirements and Controls for Reactor Building and Incore Pit Entries, Rev. 12  
 HPP-406, Decontamination of Areas and Equipment, Rev. 5  
 HPP-0302, Radiation and Contamination Survey Techniques, Rev. 10 Change A  
 HPP-0401, Issuance, Termination and Use of RWPS and SRWPS, Rev. 19 Change A  
 HPP-0151, Use of the Radiation Work Permit and Standing Radiation Work Permit, Rev. 9  
 HPP-0160, Control and Posting of Radiation Control Zones, Rev 11. Change C  
 HPP-0152, Radiation Control Area Access Control, Rev. 10 Change B  
 HPP-0158, Contamination Control for Equipment and Materials, Rev. 14 Change D

#### Records and Data

S/RWP No. 009-04800, Reactor Cavity Decon, Dated 04/01/09  
 S/RWP No. 09-04104, Lower Reactor Vessel Inspection, Dated 04/01/09  
 S/RWP No. 09-04202, Incore Pit entries for activities, Date 04/01/09  
 S/RWP No. 09-04901, Performing S/G Eddy Current Activities, Dated 04/01/09  
 S/RWP No. 09-04103, Reactor Vessel Head Boron Inspection and Underhead Camera Inspection, Dated 04/01/09  
 S/RWP No. 10-02500, RB Power entry to change out RCDT Pump, Dated 01/21/10  
 Radiological Survey Q8027, Blowdown Hold Up Tank, Dated 08/09/10  
 Radiological Survey 422, West Penetration, Dated 08/06/10  
 Radiological Survey 421, RML-6 Boron Recycle System Liquid Monitor, Dated 08/16/10  
 Radiological Survey 472, AB388 Hallways #2, Dated 08/04/10 and 08/12/10

Radiological Survey W4008/4009, RMB Hot Tool Room & Gang Boxes/Lockers, Dated 08/05/10 and 08/12/10

Radiological Survey 461, Waste Gas Decay Tank Valve Galleries and Hall, Dated 08/05/10 and 08/11/10

Radiological Survey 4090, Waste Gas Compressor "A" & "B", Dated 08/07/10 and 08/14/10

Radiological Survey 465, Charging Pumps, Dated 08/04/10 and 08/11/10

Radiological Survey 471, AB 97-01, Dated 08/05/10 and 08/11/10

Radiological Survey 494, "Dungeon", Dated 08/07/10 and 08/13/10

Radiological Survey 412, Waste Monitor Tanks & Pumps, Dated 08/09/10 and 08/16/10

HPP-0704 Att IV, Leak Test Report: J.L. Shepard, Dated 06/10/10

HPP-0704 Att IV, Leak Test Report: Eberline (CEA), Dated 06/10/10

#### CAP Documents

CR 09-02059, WANO Performance Deficiency

CR 09-00644, Tool was found to have contamination above RCA tool room limit

#### **Section 2RS4: Occupational Dose Assessment**

##### Procedures and Guidance Documents

HPP-0162, Neutron Exposure Accountability, Rev. 15

HPP-0303, Airborne Activity Sampling Techniques, Rev. 8

HPP-0411, Monitoring Exposure with Multibadging, Rev. 11

HPP-0505, Issuance and Termination of Personnel Dosimetry, Rev. 18

HPP-0515, Interpretation of Bioassay Analyses, Rev. 14

HPP-0517, Multiple Whole Body and Extremity Badging Exposure Calculations, Rev. 9

HPP-0518, Exposure Documentation Control, Rev. 10

HPP-0521, Daily Quality Control and Whole Body Counting with the ND People Mover Whole Body Counter, Rev, 7

##### Records and Data Reviewed

Attachment XXIV, Embryo/Fetus Exposure Estimates, Dated 11/13/09 and 08/04/10

Enclosure E, Rev. 9, Multibadge Monitoring Data, Pack Nos. 2877, 2878, 2879, 2880, 2881, 2882, 2883, and 2885, Dated 11/15/09

Energy Sequence Line Listing, Library Listing Reports, Reports Dated 06/05/09, 06/19/09 and 06/02/10

Health Physics, Technical Work Record, TWR # 2.2.3/09-002, Project Title: Decon Tent Alpha Incident – May, 2009, Dated 06/09/09

Neutron Exposure Logs, 08/08 – 07/10

NVLAP Certificates of Accreditation to ISO/IEC 17025:2005 for Ionizing Radiation Dosimetry, Effective Dates 10/01/09 – 09/30/10 and 07/01/10 – 06/30/11

TLD/ED Comparison Reports, 1<sup>st</sup> Quarter 2009 – 1<sup>st</sup> Quarter 2010

#### CAP Documents

Audit No. QA-AUD-201001-0, Station Radiation Control

CR-10-02469, Review of the internal dose bioassay program

**Section 2RS6: Radioactive Gases and Liquid Effluent Treatment and Monitoring Systems**  
Procedures, Guidance Documents, and Manuals

HPP-709, Sampling and Release of Radioactive Gaseous Effluents, Rev. 11  
 HPP-710, Sampling and Release of Radioactive Liquid Effluents, Rev. 12  
 HPP 904, Use of the Radiation Monitoring System (RMS), Rev.11

Records and Data Reviewed

Work Order 0816117-001 Pull Bed Sample and Refill Test Canisters, Dated 11/27/09  
 Work Order 0815589-001 'B' Train Control Room Emergency Air Canister Test, Dated 10/12/09  
 Work Order 0815592-001 RB Purge Exhaust HEPA and HECA Test Replaces STP0555.003,  
 Dated 12/01/09  
 Work Order 0906016-001, SPF Ventilation SYS Performance Test Replaces STP0555.002,  
 Dated 09/11/09  
 Work Order 0815590-001 'A' Train Control Room Emergency Air Cleanup Performance Test,  
 Dated 09/23/09  
 Continuous Gaseous Effluent Permit 90132.011.109.G, Dated 12/31/09  
 Continuous Gaseous Effluent Permit 100051.011.049.G, Dated 08/07/10  
 Gaseous Waste Release Permit (GWRP) WG-09-2, WGDT "H", Dated 12/10/09  
 Liquid Waste Release Permit (LWRP) WM-10-100, WMT-B, Dated 08/10/10  
 New Plant Site 50.75(g) Report  
 Inter-Laboratory Comparison Program Results V.C. Summer Count Room 2008 and 2009  
 Rad Monitor Removal and Restoration Check sheets Showing Radiation Monitor Unavailability  
 Times.  
 Radiation Monitor System Health Reports First Half of 2009  
 Radiation Monitor System Health Reports Second Half of 2009  
 Radiation Monitor System Health Reports First Half of 2010  
 2008 Annual Radiological Effluents Release Report, Dated 04/29/09  
 2009 Annual Radiological Effluents Release Report, Dated 04/07/10  
 V.C. Summer UFSAR Chapters 2, 11 and 12

CAP Documents

CR-10-00334, Trip Report GEL laboratories Charleston SC  
 CR-10-00362 Dry Activated Waste (DAW) samples sent to vendor lab for 10 CFR 61 analysis  
 indicated abnormal gamma and C-14 results. Trip report to vendor lab detailed in  
 CR 10-00334.  
 CR 10-00879 Potential near miss of Tech Spec surveillance requirement for RMA0002

**Section 2RS7: Radiological Environmental Monitoring Program (REMP)**

Procedures and Guidance Documents

HPP-202, Interlaboratory Intercomparison Program, Rev. 2  
 HPP-1000, Conduct of Environmental, Rev. 7  
 HPP-1011, Annual Census, Rev. 3  
 HPP-1012, Environmental Intracomparison Program, Rev. 3  
 HPP-1020, Environmental Sample Collection, Rev. 4  
 HPP-1021, Environmental Sample Preparation, Rev. 2  
 HPP-1022, Environmental Sampling and Analytical Requirements, Rev. 5  
 HPP-1023, Environmental Sample Control and Tracking, Rev. 5  
 HPP-1024, Groundwater Monitoring Well Sampling, Rev. 5

HPP 1030, Environmental Alpha/Beta Counting and Activity Determination, Rev. 3  
 HPP-1041, Environmental TLD Management, Rev. 5  
 HPP-1051, Environmental Air Sampler Calibration and Maintenance, Rev. 4  
 HPP-1052, Setup, Operation and Maintenance of the ISCO 3700 and 3710 Portable Water Sample, Rev. 3  
 HPP-1053, Combined Wastewater Discharge Flowmeter Operation, Maintenance and Calibration, Rev. 6  
 H Offsite Dose Calculation Manual for SCE&G V.C. Summer Station, Rev. 26  
 ICP-300.060, Meteorological Bi-Weekly Data Verification, Rev. 1  
 PP-1060, Meteorological Data Checks, Verification and Correction, Rev. 5  
 STP-393.005, Met Tower Instrumentation Calibration, Rev. 3

#### Records and Data Reviewed

2008 Land Use Census, Dated 03/25/09  
 2008 Land Use Census, Dated 03/11/10  
 2008 and 2009 Radiological Environmental Operating Reports, V.C. Summer Nuclear Station, Dated 04/29/10 and 04/26/10  
 HPP-1-12, attachment II, Intralaboratory Evaluation Forms, Sample IDs QC012509, Fruit, Dated 06/22/09; QC013409, Ground Water, Dated 10/27/09; QC04-1310A, Dated 05/12/10; X015109A, Dated 01/21/10; and X1QC0809, Ground Water, Dated 03/31/09  
 Offsite Dose Calculation Manual for SCE&G V.C. Summer Nuclear Station, Rev. 26  
 Results of Environmental Cross Check Program, South Carolina Electric & Gas Company, V.C. Summer Nuclear Station, First Quarter 2008 to Third Quarter 2009  
 Table 3-1, SSC Evaluation, VC Summer Nuclear Station, Summary and Work Plan – Groundwater Protection Initiative, Rev. 1, Dated 12/09/09  
 WO Steps: 0809719-001, Met Site Instrument Channel “A” Calibration, Dated 10/14/08; 0809720-001, Met Site Instrument Channel “B” Calibration, Dated 10/16/08; 0901337-001, Met Site Instrument Channel “A” Calibration, Dated 03/23/09; 0901338-001, Met Site Instrument Channel “B” Calibration, Dated 03/25/09; 0906285-001, Met Site Instrument Channel “A” Calibration, Dated 08/17/09; 0906286-001, Met Site Instrument Channel “B” Calibration, Dated 08/18/09; 0915288-001, Met Site Instrument Channel “A” Calibration, Dated 03/16/10; 0915289-001, Met Site Instrument Channel “B” Calibration, Dated 03/17/10; 1008579-001, Met Site Instrument Channel “A” Calibration, Dated 08/16/10; 1008580-001, Met Site Instrument Channel “B” Calibration, Dated 08/17/10

#### CAP Documents

Audit No. QA-AUD-200810-0, Environmental Monitoring  
 CR-09-01014, Environmental Air Sampler at Site 17 experienced a motor failure  
 CR-09-01451, Environmental TLD at site 30 was missing during the quarterly change out  
 CR-09-02007, Unable to collect Environmental Ground water sample from site 115  
 CR-09-02144, Environmental Air Sampler at Site #30 was found to be inoperable during routine change out  
 CR-09-02764, Environmental Site 44 TLDs were found missing during the 3<sup>rd</sup> quarter change out  
 CR-09-03352, Unable to collect NPDES/Environmental Ground water sample from site 115

CR-09-03856, Environmental Air Sampler at Site 6 was found to have failed and did not collect the required sample volume

CR-09-03910, Environmental TLD at site #52 was missing during the 4<sup>th</sup> quarter change out

### **2RS8: Radioactive Material Processing and Transportation**

#### Procedures, Manuals, and Guides

HPP-158, "Contamination Controls for Equipment and Materials", Rev. 14

HPP-245, "Radiological Controls for Failed Fuel", Rev. 0

HPP-703, "Shipping Radioactive Material", Rev. 18

HPP-716.003, "Cask Handling Procedure for US DOT Specification 7A, Type A Transportation Cask", Rev. 1

HPP-717, "Sample Collection, Preparation, and Analysis Techniques for Assuring Compliance with 10 CFR 61", Rev. 7

HPP-731, "Desiccation of Miscellaneous Aqueous Wastes and Sludge", Rev. 0

SOP-111, "Solid Waste Disposal System", Rev. 10

PCP-001, "Process Control Program for Processing Wet Waste", Rev. 11

SAP-0999, "Corrective Action Program", Rev. 4

#### Shipping Records and Radwaste Data

Shipment 09-018, Dewatered Resin, Type B

Shipment 09-022, Dewatered Filters, Low Specific Activity

Shipment 09-080, DAW, Low Specific Activity

Shipment 10-029, Dewatered Charcoal and Resin, Low Specific Activity

Shipment 10-031, Dewatered Resin, Low Specific Activity

Test Equipment Data Sheet, Torque Wrench No. FS2951

10 CFR Part 61 Analyses, DAW, Dated 01/28/09 and 05/18/10

10 CFR Part 61 Analyses, RCS Filters, Dated 06/18/09

10 CFR Part 61 Analyses, Primary Resin, Dated 06/15/10 and 06/28/10

10 CFR Part 50.59 Screening Review, Initiating a process to desiccate plant low activity liquids for volume reduction, Dated 07/17/00

10 CFR Part 50.59 Applicability Determination, Desiccation of Miscellaneous Aqueous Wastes and Sludge, Dated 09/20/01

3.1-00-00013, Health Physics Technical Work Record, "Desiccation Process Local Airborne Concentration"

2009 Annual Radioactive Effluent Release Report

#### CAP Documents

QA-AUD-200901-0, "Station Radiation Control and Radioactive Waste"

CR 08-03616, Resin container lid was installed 180 degrees out of position

CR 09-00394, Error on shipping manifest indicated an IP-2 package used for LSA shipment

CR 09-04581, Radioactive material shipment opened outside PA without RP present

CR 10-02658, Foreign material found in shipping cask during receipt inspection at disposal site

CR 10-02802, Drum of sludge found without proper label

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

#### Procedures

EPP-106, Emergency Preparedness Performance Indicator Procedure, Rev. 2

EPP-002, Communication and Notification, Rev. 35

EPP-110, Emergency Action Level Reference Manual, Rev. 0  
 HPP-0242, Reporting NRC Performance Indicators, Rev. 1  
 SAP-1360, NRC and INPO/WANO Performance Indicators, Rev. 1  
 SAP-999, Corrective Actions Program, Rev. 4

#### Records and Data

Documentation of Performance Indicator data October 1, 2009, to June 30, 2010, for DEP, ANS, and ERO

#### CAP Documents

CR 09-04343, Individual received a dose alarm while working for Radiography in the RB 412, the ED indicated 22 mrem  
 CR 09-04390, Worker received dose alarm due to logging in on wrong RWP  
 CR 09-00544, While performing a routine survey HP received a dose rate alarm highest rate 50.8 mrem/hr. Follow-up surveys showed highest rate 28 mrem/hr  
 CR-09-05690, Trip Report High Radiation Assessment  
 CR 09-04146, ED sent through X-ray causing dose rate alarm  
 CR 09-04147, Individual logged in on the wrong RWP causing a dose rate alarm of 61.6 mrem/hr  
 CR 09-04571, ED dose rate alarm due to individual signed in on wrong task

#### **Condition Reports Initiated for NRC Resident Inspector Identified Issues**

CR-10-02661, failure to implement TS amendment change for administrative limit on Dose Equivalent 1-131 as intended  
 CR-10-02764, minor packing leak on XVG-3172B-SW (Jet Exhauster 'B' SW inlet valve)  
 CR-10-02821, tools not logged into foreign material exclusion accountability log  
 CR-10-02930, work orders 0915335 and 0914786 were closed without performing the inspections as recommended by EPRI  
 CR-10-03043, review of CR-09-05093 determined that an EPRI recommendation to inspect cables in 5-6 years was not satisfied  
 CR-10-03150, monthly Fire Protection Team Meetings have not been performed on regular basis as described in FPP020  
 CR-10-03338, TS concern regarding aligning demineralized water to the reactor building in Modes 1, 2, 3, or 4  
 CR-10-03479, review of scaffolding erected outside of permanent plant buildings revealed that many of the walk-boards on exterior scaffold are not well secured  
 CR-10-03481, valves off of RWST have corroded nuts on body, per design body and studs for valves are stainless steel and nuts are carbon steel  
 CR-10-03689, revision of procedure SAP-124 Section 6.0 to include requirement to request clarification of component IDs similar to procedure OAP-100.4  
 CR-10-03758, reactor coolant pump oil leak investigation mini-outage issues

## LIST OF ACRONYMS

AB	Auxiliary Building
AC	Alternating-Current
ADAMS	Agency Document Access and Management System
ANS	Alert and Notification System
ANSI	American National Standards Institute
ARB	Allegation Review Board
BOP	Balance-of-Plant
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
DEP	Drill Exercise Performance
DOT	Department Of Transportation
EA	Enforcement Action
ECR	Engineering Change Request
ED	Electronic Dosimeter
EDG	Emergency Diesel Generator
EMH	Electrical Manhole
EMP	Electrical Maintenance Procedure
EPP	Emergency Plan Procedure
EPRI	Electric Power Research Institute
ERO	Emergency Response Organization
ES	Engineering Services Procedure
FERC	Federal Energy Regulatory Commission
GTP	General Test Procedure
HEPA	High Efficiency Particulate Filter
HRA	High Radiation Area
HX	Heat Exchanger
IB	Intermediate Building
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
JPM	Job Performance Measure
LER	Licensee Event Report
LHRA	Locked High Radiation Area
MDEFW	Motor Driven Emergency Feedwater
MPFF	Maintenance Preventable Functional Failure
MR	Maintenance Rule
MSPI	Mitigating System Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NSTS	National Source Tracking System
OAP	Operations Administrative Procedure
ODCM	Offsite Dose Calculation Manual

OLTS	Operator Licensing Tracking System
OOS	Out of Service
OS	Occupational Radiation Safety
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Testing
PS	Public Radiation Safety
RBCU	Reactor Building Cooling Unit
RCA	Radiation Control Area
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
REV.	Revision
RHR	Residual Heat Removal
RP	Radiation Protection
RTP	Rated Thermal Power
RWP	Radiation Work Permit
SAP	Station Administrative Procedure
SCE&G	South Carolina Electric and Gas
SDP	Significance Determination Process
SL	Severity Level
SOP	System Operating Procedure
SSC	System, Structures, and Components
STP	Surveillance Test Procedure
SW	Service Water
SWBP	Service Water Booster Pump
SWPH	Service Water Pump House
TDEFW	Turbine Driven Emergency Feedwater
TE	Traditional Enforcement
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink
VHRA	Very High Radiation Area
VIO	Violation
WANO	World Association of Nuclear Operators
WBC	Whole Body Count
WO	Work Order