



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 26, 2006

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Sr. Vice President and
Chief Nuclear Officer
Innsbrook Technical Center - 2SW
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION - NRC INTEGRATED INSPECTION REPORT
05000280/2006004, 05000281/2006004 AND 07200055/2006001

Dear Mr. Christian:

On September 30, 2006, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station Units 1 and 2 and the Surry Independent Spent Fuel Storage Installation. The enclosed integrated inspection report documents the inspection findings which were discussed on October 2, 2006, with Mr. Sloane 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, no findings of significance were identified. However, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy because of the very low safety significance of the violation and because it is entered into your corrective action program. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555- 0001; and the NRC Resident Inspector at the Surry Power Station.

VEPCO

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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/

Eugene F. Guthrie, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-280, 50-281, 72-055
License Nos.: DPR-32, DPR-37

Enclosure: NRC Inspection Reports 05000280, 05000281/2006004, and 07200055/2006001
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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cc w/encl:

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Distribution w/encl: (See page 4)

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Report to D. A. Christian from Eugene F. Guthrie dated October 26, 2006

SUBJECT: SURRY POWER STATION - NRC INTEGRATED INSPECTION REPORTS
05000280/2006004, 05000281/2006004 AND 07200055/2006001

Distribution w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281, 72-055
License Nos.: DPR-32, DPR-37

Report Nos.: 05000280/2006004, 05000281/2006004, 07200055/2006001

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2
Surry Independent Spent Fuel Storage Installation

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: July 1, 2006 through September 30, 2006

Inspectors: N. Garrett, Senior Resident Inspector
D. Arnett, Resident Inspector
B. Crowley, Senior Reactor Inspector (Section 4OA5.2)
J. Griffis, Health Physicist (Section 2OS3)
R. Hamilton, Health Physicist (Sections 2PS1 and 4OA1.4)
W. Loo, Senior Health Physicist (Sections 2OS1 and 4OA5.1)
E. Michel, Reactor Inspector (Section 1R12.2)
B. Miller, Reactor Inspector (Section 4OA5.2)

Approved by: Eugene Guthrie, Chief, Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2006-004, IR 05000281/2006-004 IR 0720055/2006-001; 07/01/2006 - 09/30/2006; Surry Power Station, Units 1 & 2, and Independent Spent Fuel Storage Installation; Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors, a senior reactor inspector, two reactor inspectors, a senior health physicist, and two health physicists. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process, Revision 3, dated July, 2000.

A. NRC Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

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

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 was operated at or near full rated thermal power for the report period with the exception of a down power to 60 percent rated thermal power on July 7, to secure the 1 'B' main feed pump and repair a leaking seal. Repairs were complete on July 8, and the unit returned to 100 percent rated thermal power.

Unit 2 was operated at or near full rated thermal power for the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

On June 27, 2006, the licensee entered hot weather conditions when temperatures reached over 90°F. The inspectors reviewed Operations Checklist OC-21, "Severe Weather Checklist," operations logs, and performed walkdowns of various components in the auxiliary building and turbine building to verify adequate compensatory actions were taken to mitigate the effects of hot weather.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed three partial walkdowns of the following systems to verify correct system alignment. The inspectors checked for correct valve and electrical power alignments by comparing positions of valves, switches, and breakers to the procedures and drawings listed in the Attachment. Additionally, the inspectors reviewed the corrective action system to verify that equipment alignment problems were being identified and properly resolved.

- Unit 1 'B' Charging (CH) Pump (1-CH-P-1B) and Unit 1 'C' CH Pump (1-CH-P-1C) while Unit 1 'A' CH Pump (1-CH-P-1A) was out of service for maintenance
- Unit 2 'A' Motor Drive (MD) Auxiliary Feedwater (AFW) Pump (2-FW-P-3A) and Unit 2 Turbine Drive (TD) AFW Pump (2-FW-P-2) while Unit 2 'B' MDAFW Pump (2-FW-P-3B) was out of service for maintenance
- Unit 1 'B' Emergency Service Water (ESW) Pump (1-SW-P-1B) and Unit 1 'C' ESW Pump (1-SW-P-1C) while Unit 1 'A' ESW Pump (1-SW-P-1A) was out of service for pump replacement

Enclosure

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns

a. Inspection Scope

The inspectors conducted tours of the following 11 areas to assess the adequacy of the fire protection program implementation. The inspectors checked for the control of transient combustibles and the condition of the fire detection and fire suppression systems (using "SPS Appendix R Report,") in the following areas:

- Unit 1 Safeguards Spray Side
- Unit 1 Safeguards Valve Pit
- Mechanical Equipment Room #1
- Fuel Building
- Unit 1 Cable Vault and Tunnel
- Unit 2 Cable Vault and Tunnel
- Main Control Room
- #3 Emergency Diesel Generator Room
- Battery Room 2B
- Mechanical Equipment Room #5
- Black Battery House

b. Findings

No findings of significance were identified.

.2 Annual Fire Brigade Drill

a. Inspection Scope

The inspectors observed a fire brigade drill to evaluate the readiness of the licensee's personnel to fight fires. Specific aspects evaluated were: use of protective clothing and self contained breathing apparatus; fire hose deployment and reach; approach into the fire area; effectiveness of communications among the fire brigade members and the control room; sufficiency of fire fighting equipment brought to the fire scene; and the drill objectives and acceptance criteria.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and the Individual Plant Examination (IPE) of Non-Seismic External Events and Fires for analyzed external and internal floods. Walkdowns were performed in the turbine building and auxiliary building to review compliance with procedures for internal and external flooding. In addition, the inspectors walked down floor drain back water stop valves, various expansion joint shields, and flood and spill control dams. The inspectors reviewed completed preventive maintenance and surveillance records for the turbine building sump pumps and floor drain back water stop valve replacement. The documents reviewed are listed in the Attachment of the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed licensed operator performance during simulator training session RQ-06.5-ST-3 to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from Loss of Reserve Station Transformer and Loss of all AC;
- recognized the high-risk actions in those procedures; and,
- were familiar with related industry operating experiences.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Quarterly Review

a. Inspection Scope

For the two equipment issues described in the plant issues listed below, the inspectors evaluated the licensee's effectiveness of the corresponding preventive and corrective maintenance. For each selected item below, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition

reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. Inspectors performed walkdown of the accessible portions of the system, performed in-office reviews of procedures and evaluations, and held discussions with system engineers. Inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65) VPAP 0815, "Maintenance Rule Program," and the Surry Maintenance Rule Scoping and Performance Criteria Matrix.

- Through wall leak on Service Water Strainer 1-VS-YS-1D
- Boric Acid Storage Tank flange bolt corrosion

b. Findings

No findings of significance were identified.

.2 Periodic Evaluation (Triennial)

a. Inspection Scope

The inspector reviewed the licensee's Maintenance Rule periodic assessments, "2004 Maintenance Rule Periodic Assessment Report Surry Power Station," dated 10/24/05 and "2003 Maintenance Rule Periodic Assessment Report Surry Power Station," dated 12/18/03, while on-site the week of August 28, 2006. These reports were issued to satisfy paragraph (a)(3) of 10 CFR 50.65. The review was to determine the effectiveness of the assessment and that it was issued in accordance with the time requirement of the Maintenance Rule (MR) and included evaluation of: balancing reliability and unavailability, (a)(1) activities, (a)(2) activities, and use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities covered by the assessment periods for the following MR systems: Auxiliary Feedwater, Service Water, Ventilation (Main Control Room and Containment), Instrument Air, Fire Protection, and Safety Injection. Specific procedures and documents reviewed are listed in the attachment to this report.

During the inspection, the inspector reviewed selected system health reports, calculations, maintenance rule evaluations, apparent cause evaluations, the site guidance implementing procedures, relevant corrective action reports, and discussed issues with system engineers. The inspector reviewed and discussed operator work-arounds, and conducted interviews with the Pumps Component Engineer and Operating Experience Coordinator. The inspector toured and inspected repaired components. The documents were compared to the site's MR program criteria, and the MR a(1) evaluations, rule related data bases, and NUMARC 93-01 revision 2.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated the following six activities for adequacy, accuracy, and completeness of plant risk assessments performed prior to changes in plant configuration for maintenance activities or in response to emergent conditions. When applicable, inspectors assessed if the licensee entered the appropriate risk category in accordance with plant procedures. Specifically, the inspectors reviewed:

- Plan of the Day (POD) for Week July 17 - 21, including the extension of the AAC Diesel Generator and rescheduling of risk significant surveillance activities
- POD for Week July 24 - 29, including the extension of the AAC Diesel Generator, removal of the Unit 1 'A' Charging Pump (1-CH-P-1A) from service and the addition of the Unit 1 'C' Main Control Room (MCR) Chiller (1-VS-E-4C)
- POD for Week August 5 - 11 including addition of the Unit 1 'C' MCR Chiller (1-VS-E-4C) for service water controller failure, oil leak on Unit 2 Station Service Air Compressor (2-SA-C-1), Unit 1 'B' Emergency Service Water (ESW) Pump (1-SW-P-1B) for suction bowl cleaning, and extension of the Unit 1 'A' Auxiliary Building Exhaust Fan (1-VS-F-58A) for additional maintenance
- POD for Week August 28 - September 1, including the addition of 'A' Charging Pump Service Water Pump (1/2-SW-P-10A) and OC-21 for Thunderstorms as well as rescheduling risk significant surveillance activities
- POD for Week September 2 - 9, including addition of Unit 1 'B' ESW Pump (1-SW-P-1B) for suction bowl cleaning, replacement of the Unit 1 'A' ESW Pump (1-SW-P-1A), and rescheduling multiple risk significant surveillance activities
- POD for Week September 17 - 22 including extension of the Unit 1 'B' MCR Chiller (1-VS-E-4B) out of service time, addition of the Unit 1 'A' Auxiliary Building Exhaust Fan (1-VS-F-58A), incorporate the performance of 1-OPT-FW-006, and inoperability of the Unit 1 'D' MCR Chiller (1-VS-E-4D)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the six operability evaluations to ensure that operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The operability evaluations were described in the engineering transmittal (ET) and plant issues listed below:

- Condition Report (CR) 000038, Motor Leads for 3-EG-C-1 (Number 3 Emergency Diesel Generator Air Compressor Number 1) at 1-EP-BKR-1J1-1A-1C have Broken Strands
- CR 000058, Unit 1 'B' Motor Driven Auxiliary Feedwater Pump Motor has a Low Polarization Number
- CR 000266, 'A' Boric Acid Storage Tank causing changes in PCS Emergency Bus Voltage Indication
- CR 000248, Low Head Safety Injection Pump Suction valve, 2-SI-MOV-3860A over thrust
- CR 001000, Turbine Driven Auxiliary Feedwater Pump High Flow when feeding three low pressure steam generators
- CR 000621, 'B' Emergency Service Water Pump discharge Pressure Indicator stanchion has one of two bolts rusted out

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the five post maintenance test procedures and activities associated with the repair or replacement of the following components to determine whether the procedures and test activities were adequate to verify operability and functional capability following maintenance of the following equipment:

- Maintenance Work Order (MWO) 728410-01 and 746188-01, Unit 1 'B' Auxiliary Feedwater Pump maintenance package, 1-FW-P-3B
- MWO 745282-01 and 727181-01, Unit 2 Auxiliary Feedwater Pump maintenance package, 2-FW-P-3B
- MWO 484680-01, 732280-01, and 753303-01, Maintenance package for Unit 1 Safeguards Area Exhaust Fan, 1-VS-F-58A
- MWO 723120-01, 724819-01, Maintenance package for Unit 2 'B' Charging Pump, 2-CH-P-1B
- MWO 600551-02, 728517-01, Work package for 1-SI-P-1A, 'A' Safety Injection Pump

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

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

Surveillance Tests

- 0-OPT-VS-002, Auxiliary Ventilation Filter Train Test
- 2-OPT-RX-005, Control Rod Assembly Partial Movement

Inservice Test

- 0-OPT-SW-002, Emergency Service Water Pump, 1-SW-P-1B
- 2-OPT-FW-003, Turbine Driven Auxiliary Feedwater Pump, 2-FW-P-2

Reactor Coolant Leak Test

- 1-OPT-RC-10.0, Reactor Coolant Leakage-Computer Calculated

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed the announced emergency response drill conducted on September 6, 2006, to assess the licensee's performance in emergency classification and off-site notification (protective actions recommendations). The drill included emergency response actions taken by the management team in the technical support center and operations personnel in the main control room simulator control room. Appropriate elements of this drill were credited by the licensee in the Emergency Response Performance Indicator.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Controls To Radiologically Significant Areas

a. Inspection Scope

Access Controls During the inspection, the licensee's program activities for monitoring workers and controlling their access to radiologically significant areas and tasks were evaluated. The inspectors evaluated the adequacy of procedural guidance, directly observed implementation of administrative and physical controls, and assessed resultant worker exposures to radiation and radioactive material.

The inspectors evaluated the licensee's procedures for posting, surveying, and controlling access to radiation areas, high radiation areas (HRA), and Very High Radiation Areas (VHRA), against the requirements of 10 CFR Part 20. During tours, the inspectors evaluated radiological postings and barricades against the current radiological surveys in select areas of the auxiliary building to determine the appropriateness of the established radiological controls. In addition, the inspectors performed independent surveys of selected plant areas and verified the dose rates recorded on current survey maps at various locations. General area dose rates were compared to licensee survey records. The inspectors observed Health Physics technician (HPT) proficiency in performing and documenting the radiation surveys for observed activities.

Access controls for Locked HRA were reviewed and discussed with Radiation Protection (RP) management and supervision. The inspectors directly inspected the licensee's designated locked doors locations and reviewed documentation to verify the condition and status of the locked doors. The inspectors also evaluated implementation of key controls and postings for VHRA and Locked HRA. During the inspection, radiological controls for several jobs were observed, including a Unit 1 monthly Operations containment entry; Instrument and Control (I&C) area monitor calibration using a 102.6 millicurie Cesium-137 source; and I&C instrument calibration activities in the Gas Stripper and Liquid Waste Tank Rooms.

The inspectors observed radiologically significant work areas within radiation areas and HRA, as well as the spent fuel pool (SFP) storage area. The licensee's physical and program controls for highly activated or contaminated materials (non-fuel) stored within the SFP were also reviewed and discussed with licensee representatives. Radiological postings and barricade requirements were evaluated for the observed areas.

The inspectors reviewed the extent of airborne radiological hazards and associated controls. Airborne radiological areas and any resulting internal exposures since the last NRC inspection were discussed with the licensee's technical staff. During observation of selected tasks, the use of engineering controls to minimize airborne radioactivity was evaluated.

RP program activities and their implementation were evaluated against 10 CFR 19.12; 10 CFR Part 20; the Updated Final Safety Analysis Report (UFSAR) details in Section 12, RP; Technical Specification (TS), Section 6.4, Unit Operating Procedures and Programs; and approved licensee procedures. Licensee documents, records, and data reviewed within this inspection area are listed in Section 2OS1 of the report Attachment.

Problem Identification and Resolution Issues identified through RP departmental self-assessments and Corrective Action Program (CAP) documents associated with radiological controls, personnel monitoring, and exposure assessments were reviewed and discussed with cognizant licensee representatives. The inspectors assessed the licensee's ability to resolve the issues identified in this RP program area. Specific assessments and plant issue documents reviewed and evaluated in detail for this inspection area are identified in Section 2OS1 of the report Attachment.

The inspectors completed 21 of 21 required samples for Inspection Procedure (IP) 71121.01.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

Area Radiation Monitoring Instrumentation and Post-Accident Sampling Systems

The operability, availability and reliability of selected direct area radiation monitor (ARM) and continuous air monitor (CAM) equipment used for routine monitoring activities were reviewed and evaluated. The inspectors observed material condition, installed configuration, where accessible, and the results of performance checks and calibrations for selected ARMs and CAMs. In addition, the inspectors reviewed the licensee's Post-Accident Sampling System (PASS) capabilities.

Licensee program activities in this area were reviewed against requirements specified in TS 6.4; applicable licensee procedures; and Section 11 of the UFSAR. Licensee guidance documents, records and data reviewed are listed in Section 2OS3 of the report Attachment.

Personnel Survey Instrumentation Current program guidance and its implementation to maintain operability, accuracy, and availability of selected portable survey instruments were reviewed and evaluated. The inspectors observed licensee personnel selecting, inspecting, functional testing, and subsequently using portable survey instruments for routine surveillances and job coverage. Availability of portable instruments for licensee use was evaluated through observation of instruments staged for issue, and discussion with licensee personnel. Portable instrument calibration data was evaluated for selected instruments staged for use or recently used by HPTs during coverage of tasks within the Radiologically Control Area (RCA). The instrument calibration data reviewed is listed in Section 2OS3 of the report Attachment.

Operability and detection capabilities of personnel monitoring equipment used to survey individuals exiting the RCA for external and internal contamination were evaluated. The inspectors reviewed calibration records and discussed the functional testing and testing intervals for personnel contamination monitor (PCM) and portal monitor equipment located at the RCA and protected area exits. PCM equipment detection capabilities were demonstrated using a low level mixed source that was passed through the equipment at different locations on the inspector's clothing. The operability and analysis capabilities of the licensee's whole body counting (WBC) equipment was also evaluated. Recent WBC equipment quality control (QC) data was reviewed and discussed with responsible personnel. In addition, current dry active waste stream radionuclide results were discussed with Health Physics (HP) staff to assess current calibration practices for personnel contamination and WBC equipment.

Licensee activities associated with personnel radiation monitoring instrumentation were reviewed against 10 CFR 20.1204 and 20.1501, and applicable licensee procedures listed in Section 2OS3 in the report Attachment.

Respiratory Protection - Self Contained Breathing Apparatus (SCBA) The inspectors reviewed the licensee's respiratory protection program guidance and its implementation for SCBA equipment. The SCBA units staged for emergency use in the Control Room and at the entry to the auxiliary building were inspected for material condition, air pressure status, and number of units available. The inspectors reviewed and evaluated selected records associated with supplied-air quality and SCBA equipment maintenance. Control room operators and RP personnel were interviewed and training material was reviewed to assess availability of spectacle inserts and training effectiveness for air cylinder change out. The inspectors verified that training, medical, and fit test qualifications were current for selected operations, HP, and maintenance personnel. The inspectors also assessed the licensee's logistics for supplying replacement air bottles to the Control Room on a sustained basis. In addition, licensee procedures were reviewed and personnel were interviewed regarding program guidance and training.

Licensee activities associated with maintenance and use of SCBA equipment were reviewed against 10 CFR Parts 20.1703 and 50.47(b); TS 6.4; Regulatory Guide (RG) 8.15, Acceptable Programs for Respiratory Protection, Rev. 1, October 1999; American Nuclear Standards Institute (ANSI)-Z88.2-1992, American National Standard

Practices for Respiratory Protection; and applicable licensee procedures. Procedures and reviewed data are listed in Section 2OS3 of the report Attachment.

Problem Identification and Resolution Selected licensee CAP documents, including audits, self-assessments, and plant issues associated with ARM and CAM equipment, portable radiation detection instrumentation, and respiratory protective program activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedure VPAP-1601, Corrective Action, Rev. 21. Specific documents reviewed and evaluated are listed in Section 2OS3 of the report Attachment.

The inspectors completed 9 of 9 required samples for IP 71121.03.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Effluent Monitoring and Radwaste Equipment The licensee's Radioactive Effluent Release Reports for Calendar Years (CY) 2004 and 2005 were reviewed and discussed. Report format, the radionuclides and quantities released in liquid and gaseous effluents, and resultant doses to the public were evaluated against applicable regulations. The inspectors reviewed the recent changes to Offsite Dose Calculation Manual (ODCM) and evaluated whether those changes were technically justified and consistent with the regulatory guidance.

The inspectors toured the Surry Radwaste Facility (SRF) and assessed major radioactive effluent process and monitoring equipment against descriptions documented in the UFSAR and the ODCM. The material condition and operability of select SRF liquid effluent monitors and ventilation stack gaseous effluent monitors were evaluated. Compensatory sampling and analyses for three randomly selected effluent monitors which were out-of-service at various times during the previous twelve months were assessed. The inspectors reviewed the most recent calibration data for select effluent monitors, (Unit 2 main vent particulate, 1-VG-RM-109, Unit 2 main vent gas 1-VG-RM-110, Kaman normal and accident range monitors 01-VG-RM-131-1&2) a gaseous effluent sample flow rate monitor, and one gamma spectroscopic instrument in the count room. Results of inter-laboratory comparisons for CY 2004 and 2005 for samples typical of plant effluents were reviewed and evaluated. During the inspection, the inspectors observed sampling and analysis of select ventilation stack gaseous effluents in accordance with licensee release permit.

The inspectors assessed adherence to procedures and to dose limits for that release. The inspectors discussed the planned replacement of the Kaman monitors and discussed compensatory actions to be taken while the monitors were out of service.

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; ANSI - N13.1 - 1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; the ODCM, Rev. 48; and UFSAR, Chapter 11. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the report Attachment.

Effluent Release Processing and QC Activities The inspectors observed HPTs processing particulate and iodine samples from the Auxiliary Building Vent release path, and preparing permits for the release.

QC activities regarding gamma spectroscopy and beta-emitter detection were discussed with count room technicians and supervision. The inspectors reviewed a sample of daily QC data for High Purity Germanium (HPGe) detectors Numbers (Nos.) 1 and 4, and daily QC printouts for Liquid Scintillation Counter (Serial No.103406). The inspectors reviewed calibration records for HPGe detector Nos.1 and 4 (select counting geometries). In addition, quarterly results of the radiochemistry cross-check program for CY 2005 were reviewed.

Selected portions of procedures for effluent sampling, processing, and release were evaluated for consistency with licensee actions. Four liquid and three gaseous release permits were reviewed against ODCM specifications for pre-release sampling and effluent monitor setpoints. The inspectors discussed performance of pre-release sampling and analysis, release permit generation, and radiation monitor setpoint adjustment with chemistry staff. The inspectors also observed closure of a release permit by a chemistry technician. The inspectors reviewed the 2004 and 2005 annual effluent reports to evaluate reported doses to the public and ODCM changes. In addition, changes to the radwaste and effluent systems were discussed with engineering and chemistry personnel.

Current licensee programs for monitoring, tracking, and documenting the results of both routine and abnormal liquid releases were reviewed and discussed in detail. Specifically, the inspectors reviewed the effect of routine effluent liquid releases made in accordance with ODCM requirements on tritium concentrations in ground water samples reported from onsite groundwater monitoring wells. In addition, reports associated with abnormal liquid releases and corrective actions were reviewed to evaluate the potential onsite/offsite environmental impact of significant leakage/spills from onsite systems, structures, and components. Also, the inspector verified that these areas had been properly documented in the licensee's site decommissioning files in accordance with 10 CFR 50.75(g), if required. Finally, licensee current capabilities and routine surveillances to minimize and rapidly identify any abnormal leaks from liquid radioactive waste tanks,

Enclosure

processing lines, and the SFP, were reviewed in detail. The actions resulting from industry initiative for groundwater protection were discussed at length. The sites hydrological assessment was discussed, as were sampling plans, communication plans and historical spills. The hydrology section of the UFSAR was reviewed and compared to the current hydrological assessment. The Ground Water Protection Action Plan, Voluntary Communication Plan and NRC Questionnaire responses were reviewed for completeness.

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 1.33, Quality Assurance Program Requirements (Operation); and Surry Plant TS. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the report Attachment.

Problem Identification and Resolution Several plant issues and one self-assessment report associated with effluent release activities were reviewed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve selected issues in accordance with procedure VPAP-1601, Corrective Action, Rev. 21. Reviewed documents are listed in Section 2PS1 of the report Attachment.

The inspectors completed 10 of the required 10 samples for IP 71122.01.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

40A1 Performance Indicator Verification

Cornerstone: Initiating Events

.1 Unplanned Scrams per 7000 Critical Hours Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the "Unplanned Scrams per 7000 Critical Hours" performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator from the first quarter of 2004 through the second quarter of 2006. Inspectors evaluated whether the performance indicator was calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." Documents reviewed included applicable monthly operating reports, licensee event reports, and operator logs.

b. Findings

No findings of significance were identified.

Cornerstone: Mitigating Systems

.2 Scrams with Loss of Normal Heat Removal Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the "Scrams with Loss of Normal Heat Removal" performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator from the third quarter of 2004 through the second quarter of 2006. Inspectors evaluated whether the performance indicator was calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." Documents reviewed included applicable monthly operating reports, licensee event reports, and operator logs.

b. Findings

No findings of significance were identified.

Cornerstone: Barrier Integrity

.3 Reactor Coolant System Leakage Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the "Reactor Coolant System Leakage" performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator from the second quarter of 2004 through the second quarter of 2006. Inspectors evaluated whether the performance indicator was calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." Documents reviewed included applicable monthly operating reports, and operator logs.

b. Findings

No findings of significance were identified.

.4 Occupational Radiation Safety and Public Radiation Safety Cornerstones

a. Inspection Scope

The inspectors sampled licensee data for the performance indicators listed below. To verify the accuracy of the Performance Indicator data reported during the period reviewed, Performance Indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 3 and 4, were used to verify the basis for each data element.

Cornerstone: Occupational Radiation Safety (OS)

To evaluate the Occupational Exposure Control Effectiveness Performance Indicator the inspectors reviewed data collected from April 2005 through June 2006. For the reviewed period, the inspectors assessed CAP records to determine whether inadequate control of locked HRA and VHRA, or unintended radiation exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and electronic dosimeter alarms associated with dose rates exceeding 1 rem per hour and cumulative dose rates exceeding established set-points from May 2005 through July 2006. Reviewed documents relative to this Performance Indicator are listed in Section 4OA1 of the report Attachment.

Cornerstone: Public Radiation Safety (PS)

To evaluate the Radiological Effluent Technical Specification/ODCM Radiological Effluent Occurrences Performance Indicator, the inspectors reviewed data for the period of April 2005 to July 2006. This included records, such as monthly effluent dose calculations, that are used by the licensee to identify occurrences of quarterly doses from liquid and gaseous effluents in excess of the values specified in NEI 99-02 guidance. The inspectors reviewed a cross section of effluent release permits for the month of June 2006 including continuous and batch liquid and gas releases. The inspectors also interviewed licensee personnel that were responsible for collecting and reporting the Performance Indicator data. In addition, licensee procedural guidance for classifying and reporting Performance Indicator events was evaluated. Reviewed documents are listed in Section 4OA1 of the report Attachment.

The inspectors completed two of the required samples for IP 71151. One sample for the OS Performance Indicator and one sample for the PS Performance Indicator.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review of Plant Issues

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.2 Annual Sample: Review Control Rod H-2 Indication Drifting

a. Inspection Scope

The inspectors performed an in-depth review of the corrective actions for Computer Enhanced Rod Position Indicator (CERPI) rod H-2 drifting down outside of its appropriate band on several occasions beginning in 2004. This issue was originally documented in the corrective action program as Plant Issue S-2004-0834. The review was performed to ensure the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the plant issue against the requirements of the licensee's corrective action program as delineated in Station Administrative Procedure VPAP-1601, "Corrective Action," and 10 CFR Appendix B, Criterion XVI, "Corrective Action."

b. Findings and Observations

No findings of significance were identified. The licensee initially performed an apparent cause evaluation (ACE) in March 2004 and was documented in the corrective action program as Plant Issue S-2004-0867-E2. This resulted in a short term corrective action to replace the database interface card (DIB) board component causing the problem and no long term corrective actions were established. The next time H-2 drifted low, the DIB card was again replaced and the old DIB card was sent to Westinghouse for testing. Westinghouse did not identify any abnormal condition with the card and no cause could be determined. A long term corrective action to further test the CERPI system was planned. Additional testing concluded that control rod indication drifting is attributed to a resistance change most probably occurring at the connectors inside containment. The licensee cleaned the reactor protection indication connectors inside containment. After three months, the problem occurred again and was documented in Plant Issue S-2004-2441. They performed another ACE which recommended removing and replacing the DIB card to reduce the resistance in the circuit. An additional long term corrective action was to continue trouble shooting. After onsite visits by the vendor, no probable cause could be determined. The vendor concluded that drifting is attributed to resistance changes in the connectors inside containment. This phenomena continued to occur through late July, 2006. The licensee corrective action is to remove and replace the DIB card to reduce the resistance in the connectors. This action provides a voltage across the card connectors 'zapping' the circuit which can eventually cause other problems. The licensee has created Work Orders 520108-01 and 520189-01 to replace the CERPI connectors inside containment during the Fall 2006, Unit 2 outage. The inspectors considered the licensee's corrective action to be slow in being developed, in that, it has taken more than two years and the root cause is still being evaluated.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 0500280 and 281/2005002-00, Radiation Monitors Inoperable Due to Condensation - Voluntary Special Report

On July 25, 2005, the licensee determined the Unit 1 and 2 Process Ventilation and Ventilation Stack effluent sample monitors were inoperable due to formation of condensation in the sample lines. Condensation in the sample lines restrict air flow to the meters resulting in a low flow condition. The licensee implemented compensatory actions using the installed backup monitors. The licensee installed additional heat tracing under a temporary modification, performed other required maintenance, and returned the monitors to service. The inspectors reviewed the licensee apparent cause evaluation, Plant Issue S-2005-3669, and the planned corrective actions. The licensee had previously identified the root cause of failure to the system as equipment aging and obsolescence. The licensee developed a modification to replace the obsolete monitors, design change proposal (DCP) 01-022, Ventilation Radiation Monitoring (KAMAN) System Replacement. The licensee began installation of the new effluent sample monitors on August 23, 2006. This LER is closed.

4OA5 Other Activities

.1 Independent Spent Fuel Storage Installations (ISFSI)

Access controls and surveillance results for the licensee's ISFSI activities were evaluated. The evaluation included review of ISFSI radiation control surveillance procedures and assessment of ISFSI radiological surveillance data. The inspectors toured the ISFSI facilities and observed access controls, thermoluminescent dosimeter locations and condition, and radiological postings on the perimeter security fence. The inspectors conducted independent radiation surveys of Pads 1 and 2 general areas and compared the data with licensee survey results.

Program guidance, access controls, postings, equipment material condition and surveillance data results were reviewed against details documented in applicable sections of the UFSAR, TS; 10 CFR Parts 20 and 72, and applicable licensee procedures. Licensee guidance documents, records, and data reviewed within this inspection area are listed in Section 4OA5 of the report Attachment.

b. Findings

No findings of significance were identified.

.2 Preoperational Testing of an Independent Spent Fuel Storage Installation (IP 60854)

a. Inspection Scope

From August 8-10, 2006, the inspectors reviewed licensee activities associated with a portion of the preoperational testing program for the NUHOMS® HD-32PTH system for spent fuel storage. Licensees are required to perform preoperational testing, or “dry run” activities, for a new design of a spent fuel storage system before actually loading spent nuclear fuel to ensure that the process can be conducted safely.

The inspectors reviewed and observed the implementation of the licensee’s welding and associated non-destructive examination (NDE) processes for sealing the Dry Shielded Canister (DSC) to ensure that these activities were conducted in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section II, III, V, and IX requirements, 1998 Edition through 2000 Addenda, Certificate of Compliance 1030, Technical Specifications, applicable portions of 10 CFR 72, and licensee procedures.

The inspectors reviewed the welding procedure specifications (WPS) and welding procedure qualification records (PQR) for both the manual and machine gas tungsten arc welding (GTAW) processes that were used, and also the weld rod filler metal (308L stainless steel) certified material test reports (CMTR) to verify compliance with the aforementioned sections of the ASME Code. In addition, the inspectors reviewed the personnel qualification records for three welders and one NDE examiner to ensure their qualifications were Code compliant.

Finally, the inspectors reviewed the demonstration for cutting open the DSC by observation of a video of this activity during a previous demonstration at a different facility.

b. Observations and Findings

For the purposes of the welding demonstration, the licensee used a mock-up of the DSC that was of the same material, diameter, and thickness of an actual DSC. However, the mock-up was only about two feet high and contained no internal structure that would normally be present to support fuel assemblies. The DSC closure process includes welding of an inner cover lid, welding closed a vent and drain port on the inner lid, and then an outer cover lid that rests approximately flush with the top of the DSC.

Upon fit-up of the inner lid, it was discovered that the lid did not fit exactly within the procedurally specified tolerances, however, the fit-up deficiencies were minor and did not affect the ability to install a quality weld. After successful completion of the welding and NDE (visual and liquid penetrant examination between each weld pass) of the inner lid, vent, and drain port covers, the licensee began fit-up of the outer lid. The licensee discovered that the outer lid also did not meet fit-up tolerances, and in fact it did not fit into the DSC shell at all. The licensee had three other outer cover lids, none of which would fit. It could not be determined at the time if the fit-up problem was due to

incorrect manufacturing of the outer lid or of the DSC mock-up itself, or if weld shrinkage from the inner lid welding was substantial enough to change the shape of the DSC such that the outer lid would no longer fit. As-built dimensions of the lids and DSC mock-up were not immediately available. The licensee was conducting a cause review and tracking this issue in their corrective action program (CR 000206) so that it will be appropriately addressed and resolved.

However, for the purposes of demonstrating their welding capability on a properly fit-up outer lid, the licensee was able to fit one of the outer cover lids into a second, different, mock-up that was onsite where it was subsequently welded in place. The inspectors only observed the root pass and accompanying visual and liquid penetrant exam of this outer cover lid.

c. Conclusions

The inspectors concluded that the observed welding process, along with the visual and liquid penetrant examinations between weld passes, met all applicable requirements and licensee procedures. In addition, all reviewed WPSs, PQRs, CMTRs, and personnel qualifications were in proper compliance with their respective Code sections. The DSC cutting video also demonstrated an acceptable method of performing such activity.

The licensee's resolution of the lid fit-up issue will be documented in CR 000206 and available for NRC review.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On October 2, 2006, the resident inspectors presented the inspection results to Mr. Sloane and other members of his staff who acknowledge the findings.

The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee Identified Violations

The following finding of very low significance 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 a Non-Cited Violation (NCV).

- 10 CFR 50, Appendix B, Criterion III, Design Control, requires in part that measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings,

procedures, and instructions. Contrary to this, on May 4, 2006, the licensee determined that the initial plant design may result in the runout and ultimate failure of an auxiliary feedwater pump. Under certain primary plant pressure and temperature scenarios where a single auxiliary feedwater pump is in operation, pump runout and damage could occur resulting in a loss of heat sink. The licensee initially determined that the motor driven pumps were susceptible to this runout and, in a later analysis, determined the turbine drive pump was also susceptible. In accordance with Inspection Manual Chapter (IMC) 0612 Appendix B, "Issue Screening," the issue is more than minor, in that, the potential loss of heat sink affects the ability to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage) attribute of the Reactor Safety Cornerstone. In accordance with the IMC Chapter 0609 Appendix A SDP Phase 1 screening worksheet, the finding was determined to be of very low safety significance because it did not result in the actual loss of a safety system and is not risk significant in response to external events (seismic, flood, and severe weather). This issue was identified in Plant Issue S-2006-1810 and Condition Report CR 1000. The licensee interim compensatory action is installation of a temporary modification to the auxiliary feedwater system which limits feedwater flow to two of the three steam generators in each unit.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Adams, Director, Nuclear Station Safety and Licensing
D. Almond, Contractor (PCI) Site Lead
T. Brookmire, Supervisor Nuclear Spent Fuel
M. Crist, Manager, Operations
B. Garber, Supervisor, Licensing
J. Grau, Manager, Nuclear Oversight
P. Harris, Supervisor Radiological Analysis
T. Huber, Manager, Engineering
D. Jernigan, Site Vice President
L. Jones, Manager, Radiation Protection and Chemistry
J. Keithly, Supervisor Health Physics Operations
C. Luffman, Manager, Protection Services
D. Miller, Supervisor Health Physics Technical Services
R. Simmons, Manager, Outage and Planning
K. Sloane, Director, Nuclear Station Operations and Maintenance
B. Stanley, Manager, Maintenance
M. Wilson, Manager, Training

NRC

E. Guthrie, Chief, Branch 5, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

05000280,281/2005002-00	LER	Radiation Monitors Inoperable Due to Condensation - Voluntary Special Report (Section 4OA3)
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Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Plant Procedures

0-OP-SW-002A, Emergency Service Water System Alignment

Plant Drawings

11448-FM-071A

Section 1R05: Fire Protection

Plant Procedures

0-FS-FP-115, Mechanical Equipment Room number 5, Elevation 9 Feet - 6 Inches

0-FS-FP-116, Control Room , Elevation 27 feet - 6 Inches

0-FS-FP-123, Diesel Generator Room Number 3, Elevation 27 Feet - 6 Inches

0-FS-FP-163, Fuel Building Elevation, 6 Feet - 10 Inches and 15 Feet - 10 Inches

0-FS-FP-164, Fuel Building Elevation, 27 Feet - 6 Inches and 45 Feet - 10 Inches

0-FS-FP-166, Black Battery Room Elevation, 27 Feet - 6 Inches

1-FS-FP-101, Unit 1 Cable Vault Penetration Area, Elevation 15 feet - 0 Inches

1-FS-FP-126, Mechanical Equipment Room Number 1, Elevation 45 Feet - 3 Inches

2-FS-FP-101, Unit 2 Cable Vault Penetration Area, Elevation 15 feet - 0 Inches

2-FS-FP-110, Battery Room 2B, Elevation 9 Feet - 6 Inches

2-FS-FP-139, Safeguards Valve Pit - Unit 1, Elevation 28 Feet - 6 Inches, Elevation 19 Feet - 6 Inches, and 12 Feet

2-FS-FP-140, Safeguards Basement - Unit 1, Elevation 11 Feet - 6 Inches

2-FS-FP-141, Safeguards Spray Side - Unit 1, Elevation 27 Feet - 6 Inches

Section 1R06: Flood Protection Measures

Maintenance Work Orders

605630-01

Plant Drawings

11448-FB-9A

11448-FB-9B

11448-FB-9C

11448-FB-27A

11448-FB-27F

11548-FB-15A

Plant Procedures

0-AP-13.00, Turbine Building or MER 3 Flooding

0-AP-13.01, Uncontrollable Turbine Building Flooding

0-AP-37.01, Abnormal Environmental Conditions

1-OSP-PL-001, Performance Test of Turbine Building Sump Pumps 1-PL-P-2A, 1-P-P-2B, 1-PL-P-2C (Turbine Building Sump No. 1) Completed 7/17/06

1-OSP-PL-002, Performance Test of Turbine Building Sump Pumps 1-PL-P-2D, 1-P-P-2E, 1-PL-P-2F (Turbine Building Sump No. 2) Completed 7/21/06

2-OSP-PL-001, Performance Test of Turbine Building Sump Pumps 2-PL-P-2A, 2-P-P-2B, 2-PL-P-2C (Turbine Building Sump No. 3) Completed 7/21/06

Section 1R12: Maintenance Effectiveness
(Quarterly Review)

Plant Drawings

11448-FM-071D

Maintenance Work Orders

398597-01, 407253-01, 419485-03, 439725-01, 439726-01, 464750-01, 468885-01, 485306-01, 487111-04, 498494-01, 498729-01, 498494-01, 500502-01, 516720-01, 517235-13, 607251-0, 750400-01, 750666-01, 753702-01, 753702-01, 753767-01

Maintenance Work Requests

189561, 218776, 190201, 190202, 190203, 190204, 190205

Plant Issues

S-1999-0708, S-1999-0959, S-1999-2696, S-2000-0417, S-2002-1811, S-2003-4371, S-2004-1205, S-2004-1236, S-2004-3995, S-2005-0768, S-2005-0890, S-2005-4352, S-2006-1912, S-2006-2344, S-2006-2911

Condition Reports

CR000214, CR000224, CR000266, CR000747, CR000998, CR001134, CR001165

Other Documents

ET Number S 97-0231, Rev. 0, Service Water 1-VS-YS-1E/1D Strainer Replacement
ET Number S 97-0231, Rev. 1, Service Water 1-VS-YS-1E/1D Strainer Replacement

Reasonable Expectation of Continued Operability

000008, 000013

Operability Determination

000009

(Triennial Review)

MR - Corrective Action Program Documents

Plant Issues

S-2006-1294-R2, Plant Issue Resolution, 1-FP-P-2 failure, dated 4/14/2006
S-2006-0785, Plant Issue, 4D MCR Chiller, dated 3/2/2006
S-2005-1919-R10, Plant Issue Resolution, 2-EP-BKR-24J-3-CKTBKR failure to autoclose, dated 4/26/2005
S-2005-3608-R1, Plant Issue Resolution, 2-EP-BKR-24J-3-CKTBKR failure to autoclose, dated 7/19/2005
S-2005-2857-R1, Plant Issue Resolution, 2-FW-305-CKVALV exceed a(1) unavailability goal, dated 5/13/2005
S-2004-2082-R1, Plant Issue Resolution, 2-FW-P-2-HOST, Function AFW05 exceeded unavailability goal, dated 6/1/2004
S-2004-3634-R1, Plant Issue Resolution, 2-SI-P-1B-PUMP exceeded unavailability performance criteria, dated 10/21/2004

MR Evaluation Response

S-2006-1294-E2, MR Evaluation Response, 1-FP-P-2-ENGINE unexpected shutdown, dated 4/14/2006
S-2006-0388-E1, MR Evaluation Response, 1-CP-C-1-HOST air compressor excessive leakage, dated 2/2/2006
S-2005-5404-E1, MR Evaluation Response, 1-CP-C-1-HOST air receiver pressure alarms, dated 12/8/2005
S-2005-2935-E1, MR Evaluation Response, 1-VS-E-4D-UNIT, Service Water temp high out of spec

Deviation Reports

S-99-0780, MCR Chiller 4D found tripped, dated 04/06/1999
VPAP-1601, Attachment 1 Corrective Action Assignment and Response for Deviation Reports, DR# S-99-0780, MCR Chiller 4D found tripped, dated 04/07/1999
VPAP-1601, Attachment 1 Corrective Action Assignment and Response for Deviation Reports, DR# S-95-1105
VPAP-1601, Attachment 1 Corrective Action Assignment and Response for Deviation Reports, DR# S-96-2498

a(1) Evaluation Responses

S-2005-3608-E1, (a)(1) Evaluation Response, 2-SI-P-1B-HOST exceeded (a)(1) unavailability goal, dated 7/19/2005
S-2005-2857-E1, (a)(1) Evaluation Response, 2-FW-305-CKVALV MR Function AFW05 exceeded (a)(1) goal unavailability hours, dated 5/25/2005

S-2004-2082-E1, (a)(1) Evaluation Response, 2-FW-P-2-HOST MR Function AFW05 exceeded allowed unavailability time, dated 6/1/2004

S-2004-3634-E1, (a)(1) Evaluation Response, 2-SI-P-1B-PUMP exceeded unavailability performance criteria, dated 10/21/2004

Audits or Self Assessments

SPS-SA-03-27, 2003 Maintenance Rule Periodic Assessment Report Surry Power Station, dated 12/18/2006

SPS-SA-04-43, 2004 Maintenance Rule Periodic Assessment Report Surry Power Station, dated 10/24/2005

Root Cause Evaluation Responses

S-2006-2702-E2, Category 3 Root Cause Evaluation Response, 4D MCR Chiller, dated 6/20/2006

S-2005-1919-E3, Category 3 Root Cause Evaluation Response, 2-EP-BKR-24J3 Breaker Failure to Autoclose, dated 4/26/2005

S-2004-2935-E2, Category 3 Root Cause Evaluation Response, 4D MCR Chiller, dated 8/17/2004

S-2004-3601-E1, Category 1 Root Cause Evaluation Response, 2-SI-P-1B-PUMP seal failure, dated 10/19/2004

S-2001-3650-E3, Category 3 Root Cause Evaluation Response, 4D MCR Chiller, dated 12/3/2001

S-1999-2695-E3, Category 3 Root Cause Evaluation Response, 4E MCR Chiller, dated 11/26/1999

Causal Evaluations

Unit 2 "B" Low Head Safety Injection Pump Seal Failure, Rev 5

Root Cause Evaluation S-2005-1919, Failure of Breaker 2-EP-BKR-24J-3 to Close during Performance of 2-OPT-ZZ-002, Unit 2

ET No. S-95-0209, Rev 0, MER 5 Chiller Inspection Surry Power Station, Unit 1, dated 05/05/1995

NESML--Q-214, NES Materials Engineering Laboratory Failure Analysis Report, dated 07/12/1995

Miscellaneous

14937.69-M-2, Total Air Load on the Instrument and Containment Instrument Air Systems, dated 07/05/1989

MR Monthly Review Report, dated 09/05/2006, (typical)

VPAP-0815 Attachment 6, Evaluation for Removal from a(1), ESGR Ventilation (1-VS-P-2B) S-1998-1076, dated 12/11/2000

Technical Specification 3.23-1, Main Control Room and Emergency Switchgear Room Ventilation and Air Conditioning Systems, dated 09/01/1993

Surry Power Station Operator Work Around List, dated 06/08/2006

STD-GN-0012, Attachment 1, Type 1 Report No: 38-Type 1-06-0001, Surry MER #5 Chiller
Service Water Erosion Issues, dated 5/5/2006
VPAP-1601, Corrective Action Procedure, rev. 22

Section 2OS1: Access Controls To Radiologically Significant Areas

Procedures and Guidance Documents

C-HP-1020.011, Radiological Protection Action Plan During Diving Activities, Revision (Rev.) 3
C-HP-1032.030, Radiation Surveys, Rev. 4
C-HP-1032.040, Contamination Surveys, Rev. 5
C-HP-1032.050, Airborne Radioactivity Surveys, Rev. 6
C-HP-1032.060, Radiological Posting and Access Controls, Rev. 1
C-HP-1032.061, High Radiation Area Key Control, Rev. 3
C-HP-1032.081, Control of Radiography, Rev. 0
C-HP-1061.110, Radiological Control Areas, Rev. 5
C-HP-1061.120, Hot Particle Control, Rev. 3
C-HP-1081.020, Radiological Work Permits: RWP Briefing and Controlling Work, Rev. 6
C-HP-1081.040, Radiological Work Permits: Providing HP Coverage During Work, Rev. 1
HPAP-1032, Radiological Survey Program, Rev. 4
HPAP-1061, Radioactive Contamination Control, Rev. 9
HPAP-1081, Radiation Work Permit Program, Rev. 5

Radiation Work Permit (RWPs)

RWP Number (No.) 06-0-1002, Rev. 0, Maintenance For All Departments in HRAs
RWP No. 06-0-1101, Rev. 0, Maintenance For All Departments in LHRAs
RWP No. 06-0-1103, Rev. 3, SRF RO Filter Changes
RWP No. 06-1-1501, Rev. 1, Unit 1 Containment Entries @ Power
RWP No. 06-2-1501, Rev. 0, Unit 2 Containment Entries @ Power
RWP No. 06-0-1503, Rev. 0, Maintenance For All Departments in LHRAs >15 rem/hr
RWP No. 06-0-1505, Rev. 0, Primary Filter Replacements
RWP No. 06-0-1507, Rev. 3, Radiation Monitor Calibration

Radiological Survey Map and Records

Map No. 100a, Unit #1 Containment - All Elevations, Dated 08/04/06
Map No. 300, Auxiliary Building 45' Elevation Overview, Dated 07/06/06
Map No. 325, Auxiliary Building 27' Elevation Overview, Dated 07/16/06
Map No. 350, Auxiliary Building 13' Elevation Overview, Dated 07/16/06
Map No. 352, Auxiliary Building 2' Elevation - Charging Pump Cube Overview, Dated 07/31/06
Map No. 375, Auxiliary Building 2' Elevation Overview, Dated 07/23/06
Map No. 378, Auxiliary Building 2' Elevation - Unit 1 Cubicle Area Overview, Dated 07/23/06
Map No. 384, PDT, Gas Stripper and Liquid Waste Tank Room - Gate 11, Dated 06/08/06
Map No. 386, Auxiliary Building 2' Elevation - Unit 2 Cubicle Area Overview, Dated 07/23/06
Map No. 401, Fuel Building 27', 15' and 6' Elevations - Overview, Dated 07/07/06
Map No. 506, D - Building Overview, Dated 07/19/06

Map No. 512, Decon Building 27' Overview - Gate 27, Dated 07/10/06
Map No. 513, Decon Building 6' Overview - Gate 22, Dated 07/10/06
Map No. 703, Low Level Waste Storage Facility, Dated 05/03/06
Map No. 803, SRF - RLW IX's and Valve Area, Dated 07/13/06
Map No. 824, SRF - 9' Elevation Overview, Dated 07/10/06
Map No. 838, SRF 4'6" Elevation Overview, Dated 07/17/06
Map No. 862, SRF 45' Elevation Overview, Dated 07/25/06
Map No. 900, Auxiliary Building 27' Sample Sink Room; Source # 231/Cs-137, Dated 08/02/06

Corrective Action Program (CAP) Documents

Audit 05-06: RP/PCP/CEHM, Dated 09/22/05
Plant Issue S-2005-3857, The locking mechanisms for Tech. Spec. High Radiation Area Locked Gates 18 and 31 failed during outage and were chained and locked, Dated 08/09/05
Self-Assessment Report, ITC-SA-04-02, Assessment of Nuclear Business Unit for Adverse Trends in Radiological Protection Events, Dated 04/29/04

2OS3: Radiation Monitoring Instrumentation and Protective Equipment

Reports, Procedures, Instructions, and Manuals

0-RM-H3, 1-RM-RI-157 High Annunciator Response Procedure, Rev. 7
C-HP-1042.350, Self-Contained Breathing Apparatus Use, Rev. 4
C-HP-1042.210, Respiratory Hazards Evaluation and Respiratory Protection Selection, Rev. 3
HP-1033.020, Radiation Protection Instrument Calibration Facility Use, Rev. 3
HP-1033.021, Reference Sources for Radiation Protection Instrumentation, Rev. 0
HP-1041.045, Whole Body Counter: Performance Checks, Rev. 2
HP-1042.420, Powered Air-Purifying Respirator Maintenance, Rev. 1
HP-1042.450, Self-Contained Breathing Apparatus Maintenance, Rev. 11
VPAP-2101, Radiation Protection Program, Rev. 27
NRC Letter, "Surry Units 1 and 2 - Issuance of Amendments Re: Elimination of Post-Accident Sampling System Requirements," dated December 18, 2001

Records and Data

SCBA Repair Logs for Surry Power Station, 1/01/02 - 6/31/06
Control Room staffing printout, E Shift Days, 7/31/06 - 8/13/06
MSA CARE Authorized Repair Center Certification, 8/12/05
Biannual Grade D Air Purity Certification, Station Service Air Compressor, 2004 - 2006
Biannual Grade D Air Purity Certification, SRF A & B Instrument Air Compressors, 2004 - 2006
Area Monitor Setpoint Record for Control Room Area Radiation Monitor RMS-157, 10/07/99
945B Series Area Monitor Detector Calibration Packages for Spent Fuel Pool Area Monitor 1-RMS-152, dated 4/02/04 and 2/03/06
945B Series Area Monitor Detector Calibration Packages for Spent Fuel Pool Area Monitor 1-RMS-153, dated 4/02/04 and 2/03/06
Containment High Range Radiation Monitor Calibration Package for channel 1-RM-RI-127, dated 10/19/04 and 4/11/06

Containment High Range Radiation Monitor Calibration Package for channel 1-RM-RI-128, dated 11/18/04, 4/14/06 and 4/28/06

Detector Source Calibration Package for Letdown Line Process Monitors 1-CH-RM-118&119, dated 3/28/05

Calibration Certificate for Eberline Teletector 611B, Serial No. 10009, 4/19/06

Calibration Certificate for Merlin Gerin DMC 2000 (Multiple Serial Nos.), 4/07/06

Calibration Certificate for Bicron Surveyor 2000, Serial No. I-184A, 2/28/06

Calibration Certificate for Bicron RSO-50E, Serial No. 188, 2/28/06

CAP Documents

Plant Issue S-2004-3840, During the monthly run on the SCBA recharging compressor

0-LSP-FP-040 the first stage of the first compressor failed to reach the required PSI, 11/02/04

Plant Issue S-2005-1886, During a Unit 2 containment entry, the HP tech's survey instrument failed, 4/25/05

Radiological Respiratory Protection Program Evaluation for 11/2002 - 09/2005

Radiological Instrumentation Program: Surveillance and Evaluation for 09/2002 - 03/2005

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Procedures and Guidance Documents

0-HSP-SS-001, Storm Drain Sampling Using the American Sigma 900max Portable Sampler and the Sigma 900 Ultrasonic Flow Meter, Rev. 5

HP-3010.010, Radioactive Effluents Records and Reports, Rev. 4

HP-3010.020, Radioactive Liquid Waste Release Permits, Rev. 3

HP-3010.021, Radioactive Liquid Waste Sampling and Analysis, Rev. 3

HP-3010.022, Radioactive Liquid Waste Accountability and Dose Calculations, Rev. 2

HP-3010.023, Unplanned Liquid Release, Rev. 5

HP-3010.030, Radioactive Gaseous Waste Release Permits, Rev. 8

HP-3010.031, Radioactive Gaseous Waste Sampling and Analysis, Rev. 21

HP-3010.032, Radioactive Gaseous Waste Accountability and Dose Calculations, Rev. 1

HP-3010.033, Unplanned Gaseous Release, Rev. 10

HP-1033.102, Canberra Series 95/ Toplevel MCA System: Performance Checks, Rev. 0

HP-1033.103, Canberra Genie/CAS MCA: Performance Checks, Rev. 1-P1

HP-1033.122, Tennelec Series 5: Performance Checks, Rev. 1

HP-1033.140, Eberline Alpha Counter SAC-4 Performance Checks, Rev.1

HP-1033.162, Packard Tri-carb Liquid Scintillation Analyzer Model 1600CA: Performance Checks, Rev. 3

HP-1033.303, Canberra Genie /CAS MCA: Calibration, Rev. 2

VPAP-2101, Radiation Protection Program, Rev.27

VPAP-2103S, Offsite Dose Calculation Manual (Surry), Rev. 8

Records and Data

Annual Radioactive Effluent Release Report- Surry Power Station, 1/1/04-12/31/04
Annual Radioactive Effluent Release Report- Surry Power Station, 1/1/05-12/31/05
Calibration Record 01-VG-RM-110(vent noble gas channel), 2/27/2002
Calibration Record 01-VG-RM-109(vent particulate channel), 10/8/2003
Quarterly Performance Test of Kaman Monitors, 8/14/2003
Calibration Record, RI-VG-131, Kaman Normal

CAP Documents

Audit: Radioactive Effluent Control Program Evaluation, S.2005.0208.R2
Plant Issue S-2004-3879, Discovered a procedure error in the as found sample alignment description in Health Physics procedure HP3010.031 when attempting to change the charcoal cartridge and the particulate filter in the Kaman process vent sampler.
Plant Issue S-2005-0280, The auxiliary building operator identified that the flow for 1-VG-RM-109 is not isokinetic and cannot be adjusted to achieve isokinetic flow.
Plant Issue S-2005-0939, RP reinitiated Vent Vent #2 HP accountability sample flow without informing operations.
Plant Issue S-2005-0966, The quality of liquid waste received from the station has declined and the quantity has increased from the same period in 2004.
Plant Issue S-2005-1931, During U2 'J' Bus logic testing the following deviation from VPAP-2103S, Offsite Dose Calculation Manual occurred. Continuous particulate and iodine sampling of vent stack #2 effluents was not restored within one hour as requested. (1hour 53 minutes)
Plant Issue S-2005-3696, As a result of the condensation issues currently experienced with 1-GW-RM-130-1 based on sample flow conditions reaching the dewpoint temperatures, a potential to impact the high range radiation monitoring skids 1-GW-RM-130-2 and 1-VG-RM-131-2 may exist.

Section 40A1: Performance Indicator Verification
(OS and PS Performance Indicators)

Procedures and Guidance Documents

HPAP-2802, NRC Performance Indicator Program, Rev. 3

Records and Data

Performance indicator submittals for Occupational and Public Radiation Safety Cornerstones 5/3/2005 - 6/6/2006
Listings of Plant Issues initiated for digital alarming dosimeter dose and dose rate alarms from May 2005 to present.

Listing of Plant Issues initiated for effluent monitors out of service October 2004 - July 2006
Gaseous Radioactive Waste Release Permit 60206.010.007.G, B' Waste Gas Decay Tank,
6/30/2006

Gaseous Radioactive Waste Release Permit 60197.001.026.G, Process Vent, 6/21/2006

Gaseous Radioactive Waste Release Permit 60198.006.025.G, Surry Radwaste Facility Vent,
6/21/2006

Gaseous Radioactive Waste Release Permit 60194.002.025.G, Ventilation Vent 1 (VG-104),
6/20/2006

Gaseous Radioactive Waste Release Permit 60199.003.026.G, Ventilation Vent 2 (VG-110),
6/22/2006

Liquid Radioactive Waste Release Permit 60192.034.026.L, Storm Drain Composite 1,
6/19/2006

Liquid Radioactive Waste Release Permit 60205.030.043.L, Liquid Waste Monitoring Tank A,
6/30/2006

CAP Documents

Plant Issue S-2005-3536, During reduction of Vent Stack 2 flowrate for maintenance on
1-VG-P-1 (Vent-Vent RM sample pump) 1-VG-RI-131-1 (Vent-Vent Kaman) sample flowrate
did not respond to maintain 1-VG-RI-131-1/2 isokinetic.

Plant Issue S-2005-3857, The locking mechanisms for tech. spec. high radiation area locked
gates 18 and 31 have failed. Both doors are currently chained and pad locked.

Plant Issue S-2006-0128, During BACCP Walkdown of Infrequently Accessed Areas
(Performed yearly) behind Gate 7, identified boric acid induced material degradation on
components associated with 1-BR-TK-5.

Plant Issue S-2006-2117, An untrained visitor authorized to enter an RCA High Radiation Area
could not be entered into the current exposure management system.

Plant Issue S-2006-2762, Analysis results of subsurface drain grab samples from Unit #1
containment, Unit #2 containment and the fuel building indicate detectable concentrations of
tritium and cesium 137.

Plant Issue S-2005-3947, The current methods for liquid waste processing results in higher
than usual dose rates on RO filters and increased personnel radiation exposure.

Section 40A2: Identification and Resolution of Problems

Plant Issues

S-2004-0834, S-2004-0838, S-2004-0867, S-2004-1831, S-2004-1478, S-2004-2441, S-2005-
4054, S-2005-4165, S-2006-1954, CR000002, CR000050, CR000085

Procedures and Reports

VPA-E-O-WEC-05-1157-RR

0-ICM-RD-RPI-002 Rev 9, CERPI Rod Position Indication Adjustments

Work Order

00395754-17, 00395754-20, 395754-19, 512774-01, 520188-01, 520189-01, 721798-01

Section 40A5: Other Activities
(Independent Spent Fuel Storage Installation)

Procedures and Guidance Documents

HP Periodic Test, 0-HPT-ISFSI-001, Independent Spent Fuel Storage Installation (ISFSI) Radiological Surveillance, Rev. 11
ISFSI Area TLDs 2005 Calendar Year and 2006 1st Quarter Readings
ISFSI Perimeter Fence Quarterly Doses, Dated 01/10/06, 03/30/06, and 07/05/06
ISFSI Perimeter Fence Survey Maps, Dated 01/09/06, 03/30/06, and 07/05/06
ISFSI Security Fence Survey Maps, Dated 01/09/06, 03/30/06, 06/20/06, and 07/05/06
Spent Fuel Storage Cask Survey Map, Dated 06/16/06, 06/18/06, 06/19/06, 06/30/06, and 07/01/06
TN-32 Grid Surveys, Dated 06/16/06 and 06/29/06
Virginia Electric and Power Surry Independent Spent Fuel Storage Installation Technical Specifications for Safety Licensee No. SNM-2501, February 25, 2005

RWPs

RWP No. 06-0-1009, Rev. 1, ISFSI Cask Alarm/Paint/Repair
RWP No. 06-0-1102, Rev. 1, Spent Fuel Dry Cask Storage

CAP Documents

Audit 05-06: RP/PCP/CEHM, Dated 09/22/05
Plant Issue S-2005-2664, Moisture identified in area TLDs on the East side, Dated 05/18/05

(Pre-operational Testing of an Independent Spent Fuel Storage Installation)

PI-900723-01.6, Closure Welding of Dry Shielded Canister, Rev. 0

ASME IX Welding Procedure Specification 8MC-GTAW.10, including supporting PQRs 046, 062, and 600, Rev. 0
ASME IX Welding Procedure Specification 8MN-GTAW/SMAW.15, including supporting PQRs 063, and 600, Rev. 0
Certification records for: PT Cleaner Batch Number 514-H56, Penetrant Batch Number 427-K54, and PT Developer Batch Number 527-B71
Certified Material Test Reports for the following welding material: 0.035" ER308L, Heat/Lot XM8490; 3/32" ER308L, Heat/Lot CM8315; and 1/8" ER308L, Heat/Lot 570708