



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

October 29, 2007

Carolina Power and Light Company  
ATTN: Mr. Robert J. Duncan, II  
Vice President - Harris Plant  
Shearon Harris Nuclear Power Plant  
P. O. Box 165, Mail Code: Zone 1  
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2007004

Dear Mr. Duncan:

On September 30, 2007, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on October 4, 2007, with Mr. C. Burton and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, one inspector identified issue and one self-revealing issue of very low safety significance (Green) were identified. The inspector identified issue and the self-revealing issue were determined to involve violations of NRC requirements. Additionally, one licensee identified violation is also listed in section 40A7 of this report. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report to the 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 Shearon Harris facility.

In accordance with 10 CFR 2.390 of the "NRC's Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) components of NRC's document system

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(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/***

Randall A. Musser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Docket No.: 50-400

License No.: NPF-63

Enclosure: NRC Inspection Report 05000400/2007004  
w/Attachment: Supplemental Information

cc w/encl: See page 3

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Sincerely,

**/RA/**

Randall A. Musser, Chief  
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Letter to Robert J. Duncan, II from Randall A. Musser dated October 29, 2007

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2007004

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-400

License No: NPF-63

Report No: 05000400/2007004

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: July 1 through September 30, 2007

Inspectors: P. O'Bryan, Senior Resident Inspector  
M. King, Resident Inspector  
G. Wilson, Project Engineer  
G. Kuzo, Senior Health Physicist (Sections 2OS3, 2PS3, 4OA1)  
H. Gepford, Senior Health Physicist (Section 2OS3)  
A. Nielsen, Health Physicist (Sections 2OS1, 4OA1, 4OA7)  
J. Diaz, Health Physicist (Sections 2PS1, 4OA1)

Approved by: R. Musser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000400/2007-004; July 1, 2007 - September 30, 2007; Shearon Harris Nuclear Power Plant, Unit 1; Radiation Monitoring Instrumentation and Protective Equipment, Event Follow-up.

The report covered a three-month period of inspection by resident inspectors and an announced inspection by regional health physics inspectors. Two Green non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

#### Cornerstone: Mitigating Systems

- Green. A self-revealing non-cited violation (NCV) was identified for the failure to properly implement operating procedures in accordance with Technical Specifications (TS) 6.8.1. Operator error in procedure implementation led to the A-SA emergency service water (ESW) pump becoming inoperable while swapping the A-SA ESW pump suction from the auxiliary reservoir to the main reservoir.

The finding is greater than minor because it is associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). The finding was evaluated using MC 0609, Appendix A, significance determination for at-power situations. The finding is considered to have very low safety significance (Green) because loss of the safety function of the A ESW train was not greater than the allowed technical specification outage time. The finding was related to the oversight aspect of the cross-cutting area of human performance because the licensee did not adequately supervise the swapping of the ESW pumps suction source (H.4.c). (Section 4OA3)

#### Cornerstone: Occupational Radiation Safety

- Green. An NRC-identified non-cited violation (NCV) of 10 CFR 20.1101 was identified for failure to maintain an acceptable program for process radiation monitor calibrations in accordance with 10 CFR 20.1501(b). Specifically, the licensee failed to maintain a program for periodic calibrations required to assure acceptable operability for process radiation monitoring equipment REM-01CC-3501ASA and REM-01CC-3501BSB used to monitor the component cooling water (CCW) system for potential contamination.

The issue is greater than minor because the failure to periodically calibrate the CCW process radiation monitors could impair the licensee's ability to accurately identify, trend and take appropriate action regarding any potential inadvertent contamination of a non-radioactive system. This finding is associated with the Occupational Radiation Safety

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Cornerstone and adversely affects the cornerstone objective attribute to properly maintain and calibrate radiation monitoring instrumentation to support radioactive material control monitoring activities for the potential release of contaminated materials into non-contaminated areas or equipment. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process (SDP) and was determined to be of very low safety significance based on operation of the CCW as a closed system and lack of identified radioactive contamination associated with system operation. The cause of this finding is related to the cross-cutting element of Problem Identification and Resolution (P.1.c). (Section 2OS3).

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.



## REPORT DETAILS

### Summary of Plant Status

The unit began the inspection period at full rated thermal power, and operated at full power until September 28, 2007. On September 28, during plant shutdown for refueling outage number 14, the reactor tripped from approximately 30% power. The unit remained shutdown for the rest of the inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R04 Equipment Alignment

##### a. Inspection Scope

##### Partial System Walkdowns:

The inspectors performed the following three partial system walkdowns, while the indicated structures, systems and components (SSCs) were out-of-service (OOS) for maintenance and testing:

- B essential services chilled water train with A essential services chilled water train out-of-service on August 22, 2007
- A emergency diesel generator with B emergency diesel generator out-of-service on August 27, 2007
- A emergency service water train with B emergency service water train out-of-service on September 11, 2007

To evaluate the operability of the selected trains or systems under these conditions, the inspectors reviewed valve and power alignments by comparing observed positions of valves, switches, and electrical power breakers to the procedures and drawings listed in the Attachment.

##### b. Findings

No findings of significance were identified.

#### 1R05 Fire Protection

##### a. Inspection Scope

For the thirteen areas identified below, the inspectors reviewed the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures, to verify that those items were consistent with final safety analysis report (FSAR) Section 9.5.1, Fire Protection System, and FSAR Appendix 9.5.A, Fire Hazards Analysis. The inspectors

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walked down accessible portions of each area and reviewed results from related surveillance tests, to verify that conditions in these areas were consistent with descriptions of the applicable FSAR sections. Documents reviewed are listed in the Attachment.

- Switchgear and switchgear ventilation room A including areas 1-A SWBRA and 1-A-5-HVA (2 areas)
- Switchgear and switchgear ventilation room B including 1-A SWBRB and 1-A-5-HVB (2 areas)
- Main control room and termination cabinet room including 12-A-CR and 12-A-6-CR1 (2 areas)
- 236' level of the reactor auxiliary building including 1-A-3-COMC, 1-A-3-COMB, and 1-A-3-COMI (3 areas)
- 261' level of the reactor auxiliary building including 1-A-4-CHFA, 1-A-4-CHFB, 1-A-EPA, and 1-A-EPB (4 areas)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On August 7, 2007, the inspectors observed licensed-operator performance during simulator training for crew C, to verify that operator performance was consistent with expected operator performance, as described in Exercise Guide SD-SIM-17.09. This training tested the operators' ability to safely shutdown the reactor plant. The inspectors focused on clarity and formality of communication, the use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight.

The inspectors observed the post-exercise critique to verify that the licensee had identified deficiencies and discrepancies that occurred during the simulator training.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed two degraded SSC/function performance problems or conditions listed below to verify the licensee's handling of these performance problems or conditions in accordance with 10CFR50, Appendix B, Criterion XVI, Corrective Action, and 10CFR50.65, Maintenance Rule. Documents reviewed are listed in the Attachment.

- C Steam Generator PORV Nitrogen Leak on July 1, 2007
- B air dryer failure on September 3, 2007

The inspectors focused on the following attributes:

- Appropriate work practices
- Identifying and addressing common cause failures
- Scoping in accordance with 10 CFR 50.65(b)
- Characterizing reliability issues (performance)
- Charging unavailability (performance)
- Trending key parameters (condition monitoring)
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1)

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #231141, 1MS-62 C S/G PORV Low Nitrogen Pressure
- AR #237530, 1MS-62 C SG PORV) Declared Inoperable due to Low Nitrogen Pressure
- AR #240044, B Air Dryer Failure to Operate, Venting Both Towers
- AR #241923, Failure of B Plant Air Dryer
- AR #245178, B Instrument Air Dryer Unavailable

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions for the plant configurations associated with the six activities listed below. The inspectors verified that the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10 CFR 50.65(a)(4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that the appropriate risk management actions were promptly implemented.

- Corrective maintenance on the C steam generator power-operated relief valve on July 3, 2007
- Corrective maintenance on the A emergency diesel generator load sequencer on July 16, 2007
- Corrective maintenance on the A emergency diesel generator on July 20, 2007.

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- Plant level two grid reliability alert on August 8, 2007
- Corrective maintenance on the nuclear instrumentation system with A essential services chiller out of service on August 22, 2007
- Voiding in the emergency service water back-up supply to the auxiliary feedwater system on August 28, 2007.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six operability determinations addressed in the ARs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the TS. The inspectors verified that the operability determinations were made as specified by Procedure OPS-NGGC-1305, Operability Determinations. The inspectors compared the justifications made in the determination to the requirements from the TS, the FSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred:

- AR #240017, A Emergency Diesel Generator Transfer Relay Failure
- AR #239651, A Sequencer Relay Failure
- AR #240968, B Containment Spray Overpressurization
- AR #242498, Pinhole Leak in B ESW System
- AR #242919, B Essential Services Chiller Temperature Drift
- AR #243966, B ESW Pipe Voiding to AFW

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the modification described in Engineering Change 65825, for a change to allow accepting, storing and using Ultra-Low Sulfur Diesel (ULSD) at Progress Energy Nuclear Generating Sites, to verify that:

- this modification did not degrade the design bases, licensing bases, and performance capabilities of risk significant SSCs

- implementing this modification did not place the plant in an unsafe condition
- the design, implementation, and testing of this modification satisfied the requirements of 10CFR50, Appendix B

The inspectors reviewed AR, associated with this area, to verify that the licensee identified and implemented appropriate corrective actions:

- AR #159226, Diesel Fuel Testing Non-Compliance
- AR #209755, Ultra Low Sulfur Fuel Oil Received on 8/06 for EDG B
- AR #226902, Diesel Fuel Oil Testing not per 3/4.8.1.1
- AR #228887, Incorrect Record Identified in Investigation
- AR #238294, ULSD Fuel Oil NCON (GL 91-18)

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the five post-maintenance tests listed below, the inspectors witnessed the test and/or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s) described in the FSAR and TS. The tests included the following:

- OP-155, Diesel Generator Emergency Power System after replacement of transfer relay 43T-DG5SA on July 20, 2007
- OST-1839 Component Cooling Water Valve Remote Position Indication Test Two Year Interval and OST-1216 Component Cooling Water System Operability (A-SA and B-SB Pumps in Service) Quarterly Interval following replacement of 1CC-147 limit switch on August 13, 2007
- OST-1080, Auxiliary Feedwater Pump 1X-SAB Full Flow Test Quarterly Interval after replacement of flow instrument FT-2050B on September 5, 2007
- OP-139, Service Water System after corrective maintenance on the A emergency service water pump breaker on September 11, 2007
- OP-155, Diesel Generator Emergency Power System after scheduled preventative maintenance on the A emergency diesel generator on September 12, 2007

b. Findings

No findings of significance were identified.

## 1R20 Refueling and Outage Activities

The inspectors evaluated licensee activities as described below, to verify that licensees considered risk in developing outage schedules, adhered to administrative risk reduction methodologies developed to control plant configuration, developed mitigation strategies for losses of the key safety functions identified below, and adhered to operating license and technical specification requirements that maintained defense-in-depth. Documents reviewed are listed in the Attachment.

- decay heat removal
- inventory control
- power availability
- reactivity control
- containment

### .1 Review of Outage Plan

#### a. Inspection Scope

Prior to the outage, the inspectors reviewed the licensee's outage risk control plan to verify that the licensee had performed adequate risk assessments, and had implemented appropriate risk management strategies when required by 10CFR50.65(a)(4).

#### b. Findings

No findings of significance were identified.

### .2 Monitoring of Shutdown Activities

#### a. Inspection Scope

The inspectors observed portions of the cooldown process to verify that TS cooldown restrictions were followed.

#### b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing

#### a. Inspection Scope

For the five surveillance tests identified below, the inspectors witnessed testing and/or reviewed test data, to verify that the systems, structures, and components involved in these tests satisfied the requirements described in the TS and the FSAR, and that the tests demonstrated that the SSCs were capable of performing their intended safety

functions.

- \* OST-1215, Emergency Service Water System Operability Train B Quarterly Interval Modes 1-6 and Defueled on July 6, 2007
- OST-1011, Auxiliary Feedwater System Operability Test Monthly Interval Modes 1-4 on July 12, 2007
- MST-E0010, 1E Battery Weekly Test on July 24, 2007
- \* OST-1076, Auxiliary Feedwater Pump 1B-SB Operability Test Quarterly Interval Modes 1-4 on August 8, 2007
  
- \* OST-1087, Motor Driven Auxiliary Feedwater Pumps Full Flow Test Quarterly Interval Mode 1 on September 5, 2007

\*This procedure included inservice testing requirements.

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 The inspectors evaluated licensee performance in controlling worker access to radiologically significant areas and monitoring jobs in-progress. The inspectors directly observed implementation of administrative and physical radiological controls; evaluated radiation worker (radworker) and health physics technician (HPT) knowledge of, and proficiency in implementing, radiation protection requirements; and assessed worker exposures to radiation and radioactive material.

During facility tours, the inspectors directly observed postings and physical controls for radiation areas, high radiation areas (HRAs), and potential airborne radioactivity areas established within radiologically controlled area (RCA) locations of the Reactor Auxiliary Building (RAB), Waste Processing Building (WPB), and Fuel Handling Building (FHB). The inspectors independently measured radiation dose rates and noted the location of air monitoring equipment for selected RCA locations. Results were compared to current licensee surveys and assessed against established postings and Radiation Work Permit (RWP) controls. Licensee key control and access barrier effectiveness were evaluated for Locked High Radiation Area (LHRA) and potential Very High Radiation Area (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with health physics supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool (SFP) were reviewed and discussed in detail. Established radiological controls were evaluated for selected job

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tasks including transfer canal maintenance work and contaminated filter change-out. 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.

For selected tasks, the inspectors attended pre-job briefings and reviewed RWP details to assess communication of radiological control requirements to workers. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points were evaluated against area radiation survey results for transfer canal maintenance and filter change-out activities. For work in the transfer canal, the inspectors observed the use of engineering controls to limit airborne radionuclide intake.

The inspectors evaluated the effectiveness of radiation exposure controls, including air sampling, barrier integrity, engineering controls, and postings through a review of both internal and external exposure results. Worker exposure as measured by ED and by licensee evaluations of skin doses resulting from discrete radioactive particle or dispersed skin contamination events during the period April 2006 - May 2007 were reviewed and assessed. The inspectors also reviewed selected Whole Body Count records from the same time period to evaluate licensee assessment of internal dose. Guidance for the use and placement of whole body and extremity dosimetry to monitor worker exposure in areas with significant dose rate gradients was reviewed and discussed.

Radiation protection activities were evaluated against the requirements of Final Safety Analysis Report (FSAR) Section 12; Technical Specifications (TS) Sections 6.11 and 6.12; 10 Code of Federal Regulations (CFR) Parts 19 and 20; and approved licensee procedures. Access controls for HRAs, LHRAs, and VHRAs were also evaluated against guidance contained in Regulatory Guide (RG) 8.38, Control of Access to High and Very High Radiation Areas in Nuclear Power Plants, Revision (Rev.) 1. Records reviewed are listed in Section 2OS1 of the report Attachment.

Problem Identification and Resolution Licensee Corrective Action Program (CAP) documents associated with access control to radiologically significant areas were reviewed and assessed. This included review of selected Nuclear Condition Reports (NCRs) related to radworker and HPT performance. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with CAP-NGGC-0200, Corrective Action Program, Rev. 19. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent audit results. Licensee CAP documents reviewed are listed in Section 2OS1 of the report Attachment.

The inspectors completed 21 of the required line-item samples described in Inspection Procedure (IP) 71121.01.



b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

Radiation Monitoring Instrumentation During tours of the RAB, WPB, FHB, and turbine building, the inspectors observed and evaluated material condition and operational status of installed radiation detection equipment including the following: area radiation monitoring systems, continuous air monitoring instrumentation, and process monitoring equipment; portal monitoring equipment (SPM-904C) and personnel contamination monitoring equipment (ARGOS, IPM-8/9); and post-accident sampling system components. Area and process radiation monitoring equipment observed included monitors for component cooling water (CCW) trains A and B, normal and emergency control room outside air intake, charging pump rooms, residual heat removal heat exchanger and pump rooms, and the spent fuel pool. Sensitivity ranges of selected instruments were compared to FSAR details and other applicable requirements.

In addition to equipment walk-downs, the inspectors observed functional checks and alarm set-point testing of various fixed and portable detection instruments. These observations included: calibration of Ludlum 12/133-4 portable instrument, weekly response checks of portal monitors and personnel contamination monitoring equipment, and daily source check results for the whole body counter (WBC). The most recent 10 CFR Part 61 analysis for dry active waste was reviewed to determine if calibration and check sources were representative of the plant source term.

The inspectors reviewed the most recent calibration records for the Containment High Range Accident Monitor (RM-01CR-3589-SA), Containment Leak Detection System Radiation Monitor (REM-01LT-3502A-SA), Containment Vent Isolation Monitor (RM-01CR-3561C-SA), and Spent Fuel Pool Radiation Monitor South (RM-1FR-3564B-SB). The records were evaluated to determine frequency and adequacy of the calibrations. In addition, calibration stickers on portable survey instruments identified as "ready-to-use" and friskers staged throughout the radiologically controlled area were noted. Calibration records for instruments used for transfer canal work observed during the inspection were reviewed. In addition, the most recent calibration of the WBC, its analysis libraries, and the last two cross-check analysis results were reviewed.

The inspectors evaluated completion and adequacy of radiation survey instrument calibrations performed by Progress Energy's central calibration facility located at the Shearon Harris Nuclear Plant. Availability of portable instruments for licensee use was evaluated through discussion with licensee personnel regarding inventory, logistics, and transfer/receipt of instruments. Records associated with the annual certifications of the gamma irradiator and neutron source used for performing calibrations and routine response checks were reviewed in detail. In addition, the inspectors observed the relocated calibration facility for gamma and neutron instrument calibrations and

discussed its adequacy for performing instrument calibrations with cognizant licensee personnel.

Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; TS Sections 3 and 6.8; FSAR Chapter 12; and applicable licensee procedures. Documents reviewed during the inspection are listed in Section 2OS3 of the report Attachment.

Self-Contained Breathing Apparatus (SCBA) and Protective Equipment Select SCBA units staged for emergency use in the main control room, operations support center, and technical support center were evaluated for material condition, air pressure, and number of units available. Extra air bottles staged for emergency use were inspected for acceptable air pressure and hydrostatic testing markings. The inspectors walked-down the SCBA bottle-filling station/compressor and reviewed Grade D breathing air certification records for the air compressor and service air. Maintenance records for select SCBA were reviewed. The inspectors noted that vital component maintenance for SCBA units was performed by a vendor.

Control room operators were interviewed to evaluate their knowledge of available SCBA equipment locations, including corrective lens inserts if needed, and their training on bottle change-out for extended periods of SCBA use. Respirator qualification records were reviewed for select operations, health physics, chemistry, and maintenance department personnel assigned emergency response duties.

Licensee activities associated with maintenance and use of respiratory protection equipment were reviewed against 10 CFR Part 20; RG 8.15, Acceptable Programs for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in Section 2OS3 of the report Attachment.

Problem Identification and Resolution Selected licensee condition reports, self-assessments, and audits associated with instrumentation and protective equipment were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure CAP-NGGC-0200, Corrective Action Program, Rev. 19. Documents reviewed are listed in Section 2OS3 of the report Attachment.

The inspectors completed nine of the specified line-item samples detailed in IP 71121.03.

b. Findings

Introduction: A Green NRC-identified non-cited violation (NCV) of 10 CFR 20.1101 was identified for failure to maintain an acceptable program for periodic calibrations of process radiation monitoring equipment in accordance with 10 CFR 20.1501(b). Specifically, for CCW process monitors REM-01CC-3501ASA and REM-01CC-3501BSB used to monitor for contamination within the CCW system, the licensee had eliminated

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periodic calibrations and did not have quantitative response check requirements to assure acceptable monitor operability and reliability.

Description: From review and discussion of current preventative maintenance calibration activities for process monitoring equipment, the inspectors identified that the CCW Train A and Train B process monitors, REM-01CC-3501ASA and REM-01CC-3501BSB, had the frequency of their calibrations changed from 18 - 24 month frequencies to a 'run to failure' classification. As such, calibrations for the subject process monitoring equipment would be scheduled only following equipment failure or other significant maintenance activities. The last calibrations for the subject monitors were conducted in September 2003. In addition, the inspectors were informed by licensee representatives that source checks for the subject monitors were discontinued in January of 2005.

The CCW process monitors are part of the radiation monitoring system (RMS) and provide an indication to operations personnel whenever the activity in the closed CCW system reaches or exceeds a pre-established level. FSAR Table 11.5.2-1 specifies a range of  $1 \text{ E}+1$  to  $1 \text{ E}+7$  counts per minute (cpm), typical sensitivity of  $1.28 \text{ E}+8$  cpm/microcurie per cubic centimeter, and no automatic isolation function for the monitors. From review of Abnormal Operating Procedure (AOP)-0005, Radiation Monitoring System, Rev. 24, and discussions with licensee personnel, the inspectors determined that the monitors have high alarm set-points established in accordance with HPP-500, Radiation Monitoring System Data Base Manual, but are used primarily for trending purposes. However, upon a high alarm signal, operations is required to enter and take actions in accordance with AOP-014, Loss of Component Cooling Water, and AOP-015, Excessive Primary Leakage for further evaluation of the source of the contamination. In addition, the inspectors noted that although not a licensee commitment, the subject monitors met the intent of IE Bulletin No. 80-10, Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to the Environment. Further, the inspectors noted that FSAR Section 11.5.2.1.1 specifies that the process and effluent monitoring system will conform with RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations - Effluent Streams and the Environment). RG 4.15 specifies the calibration of monitoring equipment at least once per 18 months; and, whenever practicable, the installation of remotely actuated check sources installed for integrity checks of the detector and the associated electrical system.

Analysis: For the identified CCW process monitors, the inspectors determined that the elimination of a periodic calibration surveillance program and subsequent classification of the equipment as 'run to failure,' in the absence of quantitative response check acceptance criteria, was a performance deficiency. Although several significant operational occurrences such as loss of/low sample line flow, high temperature alarm, detector high voltage or a shorted system signal, or loss of communication alarm RM-80 to RM-11 would lead to identification of significant monitor problems, the failure to assure accurate radiation measurements either through periodic calibrations or quantitative response checks could impair licensee actions to maintain acceptable radioactive material control activities by monitoring for the potential release of

contamination materials into uncontaminated equipment or areas. This finding is associated with the Occupational Radiation Safety Cornerstone and adversely affects the cornerstone objective's attributes to properly calibrate and evaluate process radiation monitoring equipment and instrumentation to support occupational health and safety activities as a result of routine operations and is, therefore, more than minor. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process (SDP) and was determined to be of very low safety significance based on routine operation of CCW components as a closed system, conduct of quarterly sampling and radionuclide analyses of the CCW system by chemistry, and the lack of any identified contamination outside of restricted areas. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee evaluation and resolution of previous emergency preparedness area monitor calibration issues entered into their corrective action program were not thorough enough to address the causes and extent of conditions, as necessary. The finding was related to the cross-cutting area of problem identification and resolution (P.1.c).

Enforcement: 10 CFR 20.1101 requires licensees to establish and maintain acceptable programs commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of this part. 10 CFR 20.1501(b) requires, in part, instruments and equipment used for quantitative radiation measurements to be calibrated periodically for the radiation measured.

Contrary to 10 CFR 20.1101, as of July 13, 2007, for the CCW Train A and Train B process radiation monitors, the licensee failed to maintain an acceptable periodic PM calibration program or quantitative response check and acceptance criteria guidance to ensure compliance with 10 CFR 20.1501(b). Based on the information that the CCW system routinely is operated as a closed system, and a lack of identified contamination within the system based on quarterly grab samples radioanalyses, the identified issue was determined to be of very low safety significance and has been entered into the licensee's corrective action program (NCR No. 241895). This violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000400/2005004-01, Failure to maintain an acceptable program for periodic CCW process radiation monitor calibrations in accordance with 10 CFR 20.1101.

Cornerstone: Public Radiation Safety

## 2PS1 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 radioactive waste (radwaste) system including liquid waste processing tanks and associated system piping and valves, and selected gaseous and effluent monitors were assessed for material condition and conformance with current system design diagrams. Inspected components of the gaseous effluent process and release system included sample line configurations for the plant vent air particulate/noble gas/iodine monitor skid, waste processing building including components

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associated with RM1WV-3547-1 (Stack 5a), RM1WV-3547-2 Skid 5a [Note: PIG is abandoned in place], RM1MWV-3546-1, RM1V-3546-2, RE-21AV-35092SA (Plant Vent Stack), REM-01WL-3540 [LRM Skid - treated LHSTK]. The inspectors also performed walk-down of components associated with liquid isolation valves 3LHS-292 [L&HSTK Discharge] and 3FD-421 [Floor Drain Discharge]. The inspectors interviewed chemistry staff regarding radwaste equipment configuration, effluent monitor operation, and system modifications.

The operability, availability, and reliability of selected effluent process sampling and detection equipment used for routine and accident monitoring activities were reviewed and evaluated. The inspectors reviewed results of calibrations and/or performance surveillances for selected effluent monitors including the FHB Exhaust South Radiation Monitor (REM \*1FL 3506), Liquid Radiation Monitor (REM-01BD-3527), Waste Monitor Tanks Discharge Monitor (REM 21WL 3541), Main Stack Flow Rate Monitor and Isokinetic Sampling System Calibration (REM 01AV 3509SA), Containment Leak Detection System Radiation Monitor Calibration (RM-01LT-3502-SA), and Plant Vent Stack Accident Monitor Calibration (RM 21AV 3509 1SA).

The two most recent surveillances on the RAB normal exhaust ventilation High Efficiency Particulate Air (HEPA)/charcoal air treatment systems were also reviewed. The inspectors evaluated selected out-of-service (OOS) effluent monitors for the period January 2006 through March 2007. The inspectors reviewed selected compensatory actions taken by the licensee when monitors were OOS for the dates referenced above. Technical bases for effluent monitoring Offsite Dose Calculation Manual (ODCM) and/or system design related changes were reviewed and discussed.

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; TS 6.8; 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, June 1974; ANSI-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations - Effluent Streams and the Environment, Rev. 1; the ODCM, Rev. 19; and FSAR, Chapters 11 and 12. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the report Attachment.

Effluent Release Processing and Quality Control (QC) Activities The inspectors directly observed the weekly change-out and processing of the main plant vent, waste processing building 5 and 5A vents, and the turbine building continuous airborne effluent monitoring samples. Chemistry technician proficiency in collecting, processing, and analyzing the samples, as well as preparing applicable release permits was evaluated.

QC activities regarding gamma spectroscopy and beta-emitter detection were discussed with count room technicians. The inspectors reviewed selected May through June 2007 daily QC check data for Liquid Scintillation Counters. The inspectors reviewed selected January 2006 through June 2007 QC data for alpha/beta proportional counters. For

gamma spectroscopy system No. 1 through No. 4, the inspectors reviewed Calendar Year (CY) 2006 through June 2007 daily QC quarterly cross-check summaries and the most recent calibration records. The inspectors reviewed inter-laboratory comparison tests (cross-check) for the 3rd Quarter 2005 through 1st Quarter 2007 to assess the quality of radioactive effluent sample analyses performed.

Selected procedures for effluent sampling, processing, and release were evaluated for consistency with licensee actions. Liquid and gaseous release permits were reviewed against ODCM specifications for pre-release sampling and establishment of effluent monitor set-points. The ODCM was reviewed and discussed with responsible licensee representatives to identify and evaluate any changes made since August 5, 2005. The inspectors also reviewed CY 2005 and CY 2006 annual effluent reports for effluent release data trends and anomalous releases.

Changes to licensee programs for monitoring, tracking, documenting, and reporting the results of both routine and abnormal liquid releases to onsite and offsite surface and ground water environs were reviewed and discussed in detail. The data reviewed and discussed included bases for changes to ODCM groundwater monitoring wells, groundwater flow patterns, and initial results of surface and groundwater samples both on and offsite. Tritium analysis results for groundwater monitoring wells and surface waters were compared to ODCM voluntary reporting requirements.

Observed task evolutions (sample collection and release permit generation), 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; RGs 1.21 and 4.15; 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, October 1977; and TS 6.8. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the report Attachment.

Problem Identification and Resolution. Selected licensee CAP issues and audits 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 CAP-0200, Corrective Action Program, Rev. 19. Reviewed documents are listed in Sections 2PS1 of the report Attachment.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Program

a. Inspection Scope

Radiological Environmental Monitoring Program (REMP) Implementation. During the week of July 9, 2007, REMP program activities conducted by Harris Energy and

Environmental Center (HEEC) laboratory staff were reviewed and evaluated. The licensee's 2005 and 2006 Annual Radiological Environmental Operating Reports were reviewed and discussed with licensee representatives. The inspectors evaluated data analyses, surveillance results, and land-use census assessments. Report details were assessed for required monitoring frequencies, sample types and locations, and resultant data trends.

The inspectors reviewed and evaluated procedural guidance and its implementation, and assessed knowledge and proficiency of responsible staff. In addition, laboratory analysis QC activities were reviewed and evaluated including inter-laboratory sample comparison results; Lower Limit of Detection (LLD) capabilities for tritium and iodine radionuclides; and flow calibrations for pumps used in REMP airborne sampling systems

On July 10, 2007, the inspectors toured and evaluated selected sampling stations for location and material condition of REMP equipment. Collection of air particulate filters and charcoal cartridges, and flow rate determinations were observed at air sampling stations 1, 2, 4, 5, 26, and 47. The collection and initial preparation of surface water and/or drinking water samples were observed at sampling stations 26, 38, 40 and 51. Licensee programs regarding composite surface water sampling equipment was reviewed and discussed in detail. The placement and condition of TLDs were evaluated at selected monitoring locations. The inspectors toured recently installed groundwater monitoring well locations and discussed their placement relative to site groundwater flow. Proficiency and knowledge of technicians collecting environmental samples and the adequacy of collection techniques were assessed during field observations and discussions.

Program guidance, procedural implementation, and environmental monitoring results were reviewed against TS; 10 CFR Parts 20 and Appendix I to 10 CFR Part 50 design criteria requirements; FSAR details; ODCM guidance; and applicable procedures listed in Section 2PS3 of the report Attachment. Specific laboratory QC activities were evaluated against 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 Plant, June 1974; and RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment, December 1977.

Meteorological Monitoring Program Implementation. Licensee program activities to assure accuracy and availability of meteorological data were evaluated. The inspectors interviewed licensee individuals responsible for monitoring the meteorological data reliability and the licensee's meteorology contracting consultants. The inspectors reviewed the licensee's meteorological data for January through December for CY 2005 and CY 2006, for proper validation, correction of errors, and data recovery rates. On July 11, 2007, the inspectors toured meteorological facilities and assessed equipment material condition, and reviewed instrument operability and current meteorological data accuracy.

Meteorological instrument operation, calibration, and maintenance were reviewed against details listed in the UFSAR, Chapter 2; RG 1.23, (NRC Safety Guide 23), Onsite Meteorological Programs-1972; ANSI -3.11-2000, Determining Meteorological Information; Regulatory Guide (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 Plant, June 1974; and RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment, December 1977; and applicable licensee procedures. Reviewed documents and data are listed in section 2PS3 of the report Attachment.

Unrestricted Release of Materials from the Radiologically Controlled Area (RCA).

Radiation protection program activities associated with the unconditional release of materials from the RCA were reviewed and evaluated. During the week of July 9, 2007, the inspectors directly observed surveys of potentially contaminated materials released from the RCA using the Small Article Monitor (SAM)-9 equipment. In addition, SAM-9 equipment sensitivity was assessed using a low level radioactive source, i.e. activity approximately 5000 disintegrations per minute. To evaluate the appropriateness and accuracy of release survey instrumentation, radionuclides identified within recent waste stream analyses were compared against current calibration and performance check source radionuclide types. Current calibration and performance check data were reviewed and discussed. In addition, licensee guidance to evaluate survey requirements for hard-to-detect radionuclides were reviewed and discussed.

The licensee practices and implementation of monitoring for unconditional release of materials from the RCA were evaluated against 10 CFR Part 20, TS, FSAR Section 12, and applicable procedures. The applicable licensee guidance, calibration records, and performance data are documented in the section 2OS3 of the report attachment.

Problem Identification and Resolution. Licensee CAP documents associated with REMP activities, meteorological monitoring, and the unrestricted release of materials from the RCA were reviewed and evaluated. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with CAP-NGGC-0200, Corrective Action Program, Rev. 19. Licensee CAP documents reviewed are listed in Section 2PS3 of the report Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported Performance



Indicator (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. 5 and the NEI Frequently Asked Questions (FAQ) list.

Occupational Radiation Safety Cornerstone. The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from April 2006 through March 2007. For the assessment period, the inspectors reviewed monthly PI reports and selected NCRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Report section 2OS1 contains additional details regarding the inspection of controls for exposure significant areas. Documents reviewed are listed in sections 2OS1 and 4OA1 of the report Attachment.

Public Radiation Safety Cornerstone The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from April 2006 through March 2007. For the review period, the inspectors assessed cumulative and projected doses to the public, and out-of-service (OOS) effluent radiation monitors and implementation of compensatory sampling and subsequent results. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in sections 4PS1 and 4OA1 of the report Attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of ARs

To aid in the identification of repetitive equipment failures or specific human performance issues for followup, the inspectors performed frequent screening of items entered into the CAP. The review was accomplished by reviewing daily AR reports.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected AR #224951 for detailed review. This AR was associated with relay failures in the emergency power sequencer circuitry. The inspectors reviewed this report to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's corrective action program as delineated in corporate procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 Operator Error During Swapping of Emergency Service Water (ESW) Suctions

a. Inspection Scope

The inspectors reviewed an event associated with the emergency service water (ESW) system that occurred on September 19, 2007. The inspectors reviewed plant logs and data, evaluated performance of systems and operators, and confirmed proper classification and reporting of the event. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A self-revealing Green NCV was identified for the failure to properly implement operating procedures in accordance with TS 6.8.1. Operator error in procedure implementation led to the A-SA ESW pump becoming inoperable.

Description: On September 19, 2007 the licensee was performing a scheduled task to align A-SA ESW pump suction to the main reservoir from the auxiliary reservoir in order to prepare for refueling outage 14 per Operating Procedure OP-139, Section 8.1. This realignment is performed by manually opening an 8' by 10' butterfly valve (1SW-3) and then manually shutting a 30" butterfly valve (1SW-1). The licensee started the A-SA ESW pump according to OP-139, Step 8.1.2.1. Soon after continuing with the procedure, the reactor operator in the main control room noticed that valve 1SW-1, A-SA ESW pump suction from the auxiliary reservoir, was being shut before valve 1SW-3, A-SA ESW pump suction from the main reservoir was opened. The procedure stated that 1SW-3 was to be locked open before 1SW-1 was to be locked closed. The valves are operated in this sequence in order to maintain the A ESW train functional. The reactor operator attempted to contact the operator realigning the valves, but could not establish communications with him. Before 1SW-1 was shut completely, the reactor operator aligned the A-SA ESW header from normal service water (NSW) and secured the A-SA ESW pump to prevent damage due to a loss of suction. Once 1SW-1 was shut completely, the A-SA ESW pump was declared inoperable and unavailable. After reestablishing communications, the reactor operator directed the A ESW suction to be realigned to the auxiliary reservoir by reopening 1SW-1. After this was accomplished and because the A-SA ESW pump never showed signs of losing suction while it was running, the A-SA ESW pump was declared operable and available. The total time that the A-SA ESW pump was inoperable and unavailable was approximately six minutes.

Analysis: The finding is greater than minor because it is associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring availability, reliability, and capability of systems that

respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding was evaluated using MC-0609, appendix A, significance determination for at-power situations. The finding is considered to have very low safety significance (Green) because loss of the safety function of the A ESW train was not greater than the allowed technical specification outage time. The finding was related to the oversight aspect of the cross-cutting area of human performance because the licensee failed to properly supervise the swapping of the ESW pumps suction source (H.4.c).

Enforcement: Technical specification 6.8.1 requires that procedures be implemented for the activities listed in Appendix A of Regulatory Guide 1.33. Contrary to this requirement, licensee personnel did not properly implement procedural requirements for operating the ESW system. Specifically, on September 19, 2007, an operator skipped Step 2 within Section 8.1.2 of OP-139 and inadvertently caused the A-SA ESW pump to be declared inoperable. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program (AR 247193), this violation is being treated as a NCV, consistent with section VI.A.1 of the NRC Enforcement Policy: NCV 05000400/2007004-02, Operator Error During Swapping of Emergency Service Water (ESW) Suctions.

- .2 (Closed) Licensee Event Report (LER) 05000400/ 2007-02-00, Control Rod Shutdown Bank Anomaly Causes Entry into Technical Specification 3.0.3.

On June 12, 2007, the licensee was performing a surveillance test which required control rods to be inserted into the core ten steps and then withdrawn back to their normal operating positions. During the test, while inserting shutdown bank A, a rod control urgent failure alarm occurred and the rods became inoperable. Since more than one shutdown bank rod were not fully withdrawn and were inoperable, the licensee was in a condition prohibited by Technical Specifications. Trouble-shooting revealed that a master cycler counter card failed and repairs were completed three hours and thirty-one minutes after the failure occurred. All control rods were always capable of being manually or automatically inserted into the core, via a reactor trip. The LER was reviewed by inspectors and no findings of significance were identified and no violation of NRC requirements occurred. The licensee documented the failed equipment in AR #236248. This LER is closed.

- .3 Reactor Trip

a. Inspection Scope

The inspectors responded to a reactor trip which occurred on September 28, 2007 during a plant shutdown for refueling outage number 14. The reactor tripped from approximately 30% power. The inspectors monitored the operator response from the control room and verified the performance of mitigating systems. Additional event response inspection will be documented in Inspection Report 05000400/2007005.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

On July 13, 2007, inspectors discussed results of the onsite radiation protection inspection with Mr. R. Duncan, Site Vice President, and other responsible staff. The inspectors noted that any proprietary information reviewed during the course of the inspection would not be included in the documented report.

A subsequent telephone exit was conducted on August 28, 2007, to discuss NRC review of licensee data provided to address a potential finding associated with calibration of the CCW process radiation monitors. The inspectors noted that from review of additional licensee data provided, a green NCV was identified for failure to maintain a program for periodic calibrations of the CCW process radiation monitors in accordance with 10 CFR 20.1101.

On October 4, 2007, the resident inspectors presented the inspection results for the remainder of the inspection activities to Mr. C. Burton and other members of your staff. 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 meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a non-cited violation (NCV).

10 CFR Part 20.1902(b) requires each high radiation area (HRA) to be conspicuously posted. Contrary to this, on July 28, 2006, the HRA posting at the entrance to WPB 211' elevation Floor Drain Tank Room "D" was found on the floor, thereby making the subject posting inconspicuous. On April 17, 2007, the HRA posting to the 190' elevation North Equipment Drain Transfer Tank Room was also found on the floor. Both examples were identified and immediately corrected by health physics technicians performing routine locked high radiation areas barrier checks. These events were documented in the licensee's CAP as AR 00201481 and AR 00229805. Although this event involved failure to maintain proper controls to actual HRAs, this finding is of very low safety significance because there was no evidence of unauthorized worker entry into the areas nor unexpected/unintended radiation exposures to licensee personnel.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

D. Alexander, Superintendent, Environmental and Chemistry  
C. Burton, Director, Site Operations and Plant General Manager  
D. Corlett, Supervisor - Licensing/Regulatory Programs  
R. Duncan, Vice President Harris Plant  
M. Findlay, Superintendent, Security  
W. Gurganious, Training Manager  
K. Henderson, Maintenance Manager  
C. Kamiliaris, Manager - Nuclear Assessment Manager  
T. Natale, Manager - Site Support Services  
S. O'Connor, Manager - Engineering  
J. Pierce, Supervisor - Nuclear Assessment  
M. Burton, Acting Supervisor - Emergency Preparedness  
G. Simmons, Superintendent - Radiation Control  
J. Warner, Manager - Operations  
E. Wills, Manager - Outage and Scheduling

#### **NRC personnel**

R. Musser, Chief, Reactor Projects Branch 4

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

Opened and Closed

05000400/2007004-01	NCV	Failure to maintain an acceptable program for periodic CCW Process Radiation Monitor calibrations in accordance with 10 CFR 20.1101 (Section 2OS3).
05000400/2007004-02	NCV	Operator Error During Swapping of Emergency Service Water (ESW) Suctions (Section 4OA3).

Closed

05000400/2007-02-00	LER	Control Rod Shutdown Bank Anomaly Causes Entry into Technical Specification 3.0.3. (Section 4OA3).
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## LIST OF DOCUMENTS REVIEWED

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

#### Partial System Walkdown

Essential services chilled water system:

- Procedure OP-148, Essential Services Chilled Water System,
- Drawing 2165-S-0999, Simplified Flow Diagram Essential Services Chilled Water Systems

Emergency diesel generator system:

- Procedure OP-155, Diesel Generator Emergency Power System,
- Drawing 2165-S-0633, Simplified Flow Diagram Emergency Diesel Generator Systems

Emergency service water system:

- Procedure OP-139, Service Water System,
- Drawing 2165-S-0547 and 2165-S-0548 , Simplified Flow Diagrams Circulating and Service Water Systems

### **Section 1R05: Fire Protection**

- FPP-001, Fire Protection Program Manual
- FPP-012-02-RAB261, Reactor Auxiliary Building Elevation 261 Fire Pre-Plan
- FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan
- FPP-012-02-RAB286, Reactor Auxiliary Building Elevation 286 Fire Pre-Plan
- FPP-012-02-RAB305-324, Reactor Auxiliary Building Elevations 305 and 324 Fire Pre-Plan

### **Section 1R11: Licensed Operator Requalification**

- SD-SIM-17.09, Simulator Training Guide
- GP-006, Normal Plant Shutdown From Power Operation to Hot Standby

### **Section 1R12: Maintenance Effectiveness**

- NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants
- ADM-NGGC-0101, Maintenance Rule Program
- WO 1072424, M, 1MS-62:005, Has Small Nitrogen Leak on Top of Gas Bottle
- WO 1082862, M, CM-M0186, 1MS-62:005, Repair N2 Leak, Fill & Bleed
- WO 1085675, 1MS-62 Has Low N2 Pressure Causing a MCB Alarm
- WO 731586, Repair 1CO-150 Valve is Leaking By
- WO 1091254, 1CO-189 is Leaking by due to Defective Solenoid 1CO-191
- WO 1120438, Replace 1CO-193, Check Valve Leaks by the Seat

- WO 1120439, Replace 1CO-194, Check Valve Leaks by the Seat
- WO 1116357, 1CO-E045, Dryer is blowing down With Dryer Pressurized and Deenergized

**Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation**

- OMP-003, Outage Shutdown Risk Management.
- WCM-001, On-line Maintenance.

**Section 1R15: Operability Evaluations**

- OPS-NGGC-1305, Operability Determinations

**Section 1R17: Permanent Plant Modifications**

- System Description SD-155.01, Emergency Diesel Generator
- Final Safety Analysis Report Section 8.3.1, On-Site Power Systems, AC Power
- Final Safety Analysis Report Section 9.5.4, Diesel Generator Fuel Oil Storage and Transfer System

**Section 1R19: Post Maintenance Testing**

- WR 295620, 43T-DG5/SA Transfer Relay Will Not Rotate to Transfer Position
- AR #240017, Transfer Relay 43T-DG5-SA Failed to Transfer to Local
- WO 1059103, I, 1CC-147 Has Loose Limit Switch Shaft

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

- FHP-020, Refueling Operations
- FHP-014, Fuel and Insert Shuffle Sequence

**Section 2OS1: Access Controls To Radiologically Significant Areas**

Procedures, Guidance Documents, and Manuals

- NGGM-PM-0002, Radiation Control and Protection Manual, Rev. 36
- HPS-NGGC-0003, Radiological Posting, Labeling, and Surveys, Rev. 10
- AP-504, Administrative Controls for Locked and Very High Radiation Areas, Rev. 23
- HPP-600, Radiation Work Permits, Rev. 21
- CAP-NGGC-0200, Corrective Action Program, Rev. 19

Records and Data Reviewed

- ALARA Work Plan - Fuel Transfer Canal, Transfer Cart and Gate Valve



- Maintenance, Rev. 7
- RWP No. 00001771, Routine Operations Activities
- RWP No. 00001769, Health Physics Activities
- RWP No. 00001780, Filter Changes on Contaminated Systems
- RWP No. 00004154, Transfer Canal Work
- Air Sample No. AS-20070710-003, FHB 286' - 1-4 Transfer Canal, 7/10/07
- Air Sample No. AS-20070710-004, FHB 286' - 1-4 Transfer Canal, 7/10/07
- Radiological Survey No. 0307-004, RAB 190N - Eqmt. Drain Transfer Tank/Pumps, 3/7/07
- Radiological Survey No. 0211-012, WPB 211 - Waste Holdup Tank, 2/11/06
- Radiological Survey No. 0710-004, FHB 286' - South End Gates 1 Thru 4, 7/10/07
- Alpha Smear No. 200707101023, 1-4 Transfer Canal, 7/10/07
- Contamination Event Logs, April 2006 - May 2007
- Selected Whole Body Count Records, April 2006 - May 2007
- Selected Access Control Records, April 2006 - May 2007

#### CAP Documents

- H-RP-06-01, Harris Radiation Protection Assessment, 10/25/07
- AR 00201481, LHRA posting found on floor, 7/28/06
- AR 00229805, LHRA posting found on floor, 4/17/07
- AR 00193852, Worker logged onto wrong RWP and received dose rate alarm upon entering pressurizer cubicle, 5/8/06
- AR 00222148, Short length of HRA boundary rope found down, 2/11/07
- AR 00213804, Trend noted in radioactive material labeling deficiencies, 11/17/06
- AR 00213034, Alpha surveys missed, 11/15/06
- AR 00223246, Alpha monitoring program needs to be re-evaluated, 2/21/07
- AR 00216291, LHRA door was found with exit latch missing, 12/12/06

#### **Section 2OS3: Personnel Radiation Monitoring Instrumentation and Protective Equipment**

##### Procedures

- Abnormal Operating Procedure (AOP)-005, Radiation Monitoring System, Rev. 24
- AOP-014, Loss of Component Cooling Water, Rev. 29
- AOP-016, Excessive Primary Leakage, Rev. 37
- AOP-018, Reactor Coolant Pump Abnormal Conditions, Rev. 33
- Auxiliary Operator Rounds Guidance, Rev. 39
- AP-512, Use of Respiratory Protection Equipment, Rev. 30
- ADM-NGGC-0107, Equipment Reliability Process Guideline, Rev. 7
- CRC-821, Post-Accident Sampling, Rev. 27
- DOS-NGGC-0019, Whole Body Counter (WBC) Intercomparison Testing, Rev. 6
- DOS-NGGC-0020, WBC System Calibration, Rev. 7

- EPM-420, Emergency Equipment Inventory, Rev. 7
- HPS-NGGC-0013, Personnel Contamination Monitoring, Decontamination, and Reporting, Rev. 6
- HPP-630, Respiratory Protection, Rev. 20
- HPP-631, Certification and Operation of Breathing Air Supplies, Rev. 18
- HPP-725, Operation of Whole Body Contamination and Portal Monitors, Rev. 17
- HPP-780, Radiation Monitoring System Operator's Manual, Rev. 35
- HPS-0005, Calibration of Portable Radiation and Contamination, Rev. 7
- HPS-0009, Operation of Radiation & Contamination Survey Instruments, Rev. 3
- HPS-0011, Cs-137 Calibration Source Standardization, Rev. 4
- SIC-700, Operation and Certification of Calibration Standards, Rev. 10
- SIC-710, Calibration of Semi-Portable Radiation Detection Equipment, Rev. 9
- SIC-720, Calibration of Semi-Portable Air Sampling Equipment, Rev. 9
- SIC-725, Calibration of Whole Body Friskers or Portal Monitors, Rev. 13

### Records and Data

- WBC Calibration Record, 9/12/06
- MST-I0401/CM-I0085, Containment High Range Accident Monitor Calibration, 4/26/06
- MST-I0355/CM-I0085, Containment Leak Detection System Rad Monitor Calibration, 5/7/06
- MST-I0351/CM-I0085, Containment Vent Isolation Monitor Calibration, 4/23/06
- MST-I0387/CM-I0085, SFP Radiation Monitor South Channel Calibration, 12/28/05
- EST-212 Attachment 41, Penetration M-88 Liquid Sample Return from Post-Accident Skid LLRT for 1SP-201 and 200, 4/18/06
- EST-212 Attachment 9, Penetration M-33 Gas Sample Return from Post-Accident Skid LLRT for 1SP-208 and 209, 5/11/06
- WBC Calibration Record, Standup #1, 9/8/06
- Results for WBC Confirmatory Measurement Program, 3rd Quarters 2005 and 2006
- Calibration Records: Tennelec s/n 2 (11/14/06); Tennelec s/n 3 (11/15/06); AMS-3 s/n 1407 (8/22/06); LMC-12/42-30 s/n 35965 (9/13/06); LMC 177 s/n 34541 (2/19/07); LMC 177 s/n 45559 (2/19/07); DCA 3090 s/n 473291 (2/2/07); RO-2 s/n 2557 (4/11/07); RO-2 s/n 1706 (4/11/07); SAM s/n 141 (1/26/07); SAM s/n 142 (6/7/06, 3/1/07); SAM s/n 143 (7/31/06); SAM s/n 154 (8/19/06); SAM s/n 196 (8/18/06); SAM s/n 23 (8/22/06); ARGOS s/n 510014 (1/11/06); ARGOS s/n 510016 (1/12/06); ARGOS s/n 510013 (1/5/06); ARGOS s/n 510-016 (1/5/06); ARGOS s/n 510014 (1/5/06); ARGOS s/n 510015 (3/29/06); SPM-904C s/n 90436 (7/15/06); SPM-904C s/n 90437 (7/17/06); SPM-906 s/n 906093 (3/28/06); SPM-906 s/n 906095 (6/8/05); SPM-906 s/n 906084 (4/18/06); SPM-906 s/n 906084 (4/20/06); IPM-8 s/n 368 (8/18/06); IPM-8 s/n 374 (3/28/06, 2/20/07); IPM-8 s/n 152 (4/1/06); IPM-9 s/n 317 (3/2/07); IPM-9 s/n 318 (10/16/06)
- Hydrostatic Test Data: bottles 2193 (1/04), 2482 (12/03), and 2959 (1/04)
- Scott PosiCheck3 Data for select SCBA: 12/21/06

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- Respirator Equipment History Record for select SCBA: 2005-2006
- Grade D Air: Blast yard compressor (7/26/05, 1/26/06, 2/6/06, 8/2/06, 2/13/07), Eagle air compressor (7/26/05, 2/8/06, 8/4/06, 2/13/07), Service air compressor (7/26/05, 2/7/06, 8/2/06, 2/13/07)
- Battelle Calibration Report, model 530 electrometer, s/n 219, and two probes, 9/19/06
- NIST Report of Test, Ludlum model 12 with 10" rem ball, s/n 66625, 2/16/07
- Neutron Certification Data Sheet, 6/13/07
- Radiation Field Measurement Data, Shepherd model 28, 3/29/07
- Radiation Field Measurement Data, Shepherd model 89, 3/27/07
- WO 00192908, Perform PIC-I907, Inspect & Calibrate Liquid Radiation Monitor, REM-01CC-3501B, 09/17/03
- WO 00224205 01, Perform PIC-I907, Inspect and Calibrate Liquid Radiation Monitor, RC-01CC-3501ASA, 10/01/03.
- Drawing CPL-2165 S-1319, Simplified Flow Diagram, Component Cool Water, Sheet 1, Rev. 17
- Drawing CPL-2165 S-1320, Simplified Flow Diagram, Component Cool Water, Sheet 2, Rev. 0317

### Corrective Action Program Documents

- H-RP-05-01, Harris Radiation Protection Assessment, 11/2/05
- H-RP-06-01, Harris Radiation Protection Assessment, 10/25/06
- Self-Assessment 147223, Radiation Protection Emergency Preparedness, 8/29/05-9/2/05
- Self-Assessment 160150, Radiation Protection Central Calibration Facility, 7/18/05-7/22/05
- Self-Assessment 178837, Respiratory Protection Program, 7/3/06-12/1/06
- PMR 138482, Delete the RTF PM tasks for system 7005, 9/28/04
- NCR 165629, EP Rad monitors classified as RTF need to be reevaluated, 8/4/05
- NCR 172139, Issue 1 central cal lab output and performance, 10/10/05
- NCR 191133, RO-2 instrument failure, 4/14/06
- NCR 198890, Instrument used without current source check, 6/29/06
- NCR 200053, HP cal lab environment out of tolerance 7/13/06
- NCR 215383, Material condition of the AV2000 and MSA respirators are in poor condition, 12/5/06
- NCR 220499, RM-35RM-3505A2, CR ventilation outside air intake failed, 1/27/07
- NCR 222313, Radiation monitor RM-1CZ-3505A2 in communication failure, 2/13/07
- NCR 222655, Instrument used after calibration due date, 2/15/07
- NCR 227536, Evaluate portal monitor alarm check source activity, 3/28/07
- NCR 227595, Radiation monitors in communication failure, 3/29/07
- NCR 228318, RMS Re-occurring problems, 4/4/07
- NCR 232619, RCA exit practice review, 5/10/07
- NCR 232992, Personnel not following RCA exit monitor posting instructions, 5/14/07

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

### Procedures, Guidance Documents, and Manuals

- SHNPP Updated Final Safety Analysis Report, (Chapter 11)
- AOP-009, Accidental Release of Waste Gas, Rev. 17
- AP-523, Preparation of the Annual Effluent Release Report, Rev. 10
- AP 556, Effluent Management Program, Rev 2
- CRC-240, Plant Vent Stack 1 Effluent Sampling, Rev. 10
- CRC-241, Turbine Building Vent Stack 3A Effluent Sampling, Rev. 13
- CRC-242, Waste Processing Building Vent Stack 5 Effluent Sampling, Rev. 14
- CRC-243, Waste Processing Building Vent Stack 5a Effluent Sampling, Rev. 11
- CRC-245, Particulate and Iodine Grab Sampling on Wide Range Gas Monitors, Rev. 6
- CRC-851, ODCM Software Instructions And Documentation
- REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 6
- MST-I0378, Plant Vent Stack Accident Monitor RM-21AV-3509-1SA Operational Test
- MST-I0302, Waste Monitor Tanks Discharge Flow Loop (F-6119) Calibration
- MST-I0327, Waste Monitor Tanks and Waste Evaporator Condensate Tanks Discharge Radiation Monitor REM-21WL-3541 Calibration
- MST I0411, Main Plant Vent Stack Flow Rate Monitor and Isokinetic Sampling System Calibration, Rev. 10
- MST I0376, Plant Vent Stack Accident Monitor RM 21AV 3509 1SA Calibration, Rev 15
- PLP-500, Fish Kill Reporting, Hazardous Substances Release Notification, Non Routine Radioactive Release Notification, and Oil Spill Notification, Rev. 19
- RST-210, Liquid Effluent Radiochemistry Surveillance, Rev. 19
- RST-211, Gaseous Effluent Radiochemistry Surveillance, Rev. 18
- Plant Operating Manual Volume 1, Part 2, plant Program Procedure, PLP-500, Fish Kill Reporting, Hazardous Substances Release Notification, Non-routine Radioactive Release Notification, and Oil Spill Notification, Rev. 19

### Records and Data

- HNP-06-046, 2005 Annual Radioactive Effluent Report, dated 04/17/06
- HNP-07-046, 2006 Annual Radioactive Effluent Report, dated 04/13/07
- 60009.036.001.G, Gaseous Radioactive Waste Release Permit (Pre-Release Supplementary Data and Post-Release Permit Update)
- 70092.031.022.G, Continuous Gaseous Effluent Permit (Pre-Release Supplementary Data and Post-Release Permit Update)
- 70112.034.001.G, Gaseous Effluent Permit (Pre-Release Supplementary Data and Post-Release Permit Update)
- 70116.011.028.G, Gaseous Effluent Permit (Only Post-Release Permit Update)
- 70021.001.010.L, Liquid Effluent Release Permit

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- 70022.002.009.L, Liquid Effluent Release Permit
- WO 00149656-02, Perform PIC-I904 FHB Exhaust Radiation Monitor Calibration (REM \*1FL 3506)
- WO 00440547-01, Perform PIC-I906 Calibration of General Atomic Liquid Radiation Monitor (REM-01BD-3527)
- WO 00525250-01, Perform MST I0327 Waste Monitor Tanks Discharge Monitor (REM 21WL3541) Calibration
- WO 00584736-01, Perform MST-I0411 Main Stack Flow Rate Monitor and Isokinetic Sampling System Calibration (REM 01AV 3509SA)
- WO 00626340-01, Perform MST-I0355 Cont Leak Detection System Radiation Monitor Calibration (note: monitor RM-01LT-3502-SA)
- WO 00628714-01, Perform MST-I0351/CM-I0085, Cont Vent ISO Monitor Calibration (note: monitor RM-01CR-3561CSA)
- WO 00654952-01, Perform MST-I0376 Radiation Monitoring System (RMS) RM 21AV 35091SA Plant Vent Stack Accident Monitor Channel Calibration
- WO 00709037-01, PVS Flow Rate Monitor Reading High Value
- WO 00733508-01, Perform MST I0302 Waste Monitor Effluent Line Flow Calibration (REM21WL 3541)
- WO 00775545-04, Remove Floor Plug for Waste Gas Leak (note: first leak in 2005)
- WO 00703170-02, Airflow Capacity/E-46/WPB Filtered (note: performance of EPT-400)
- WO 00803679-01, Remove Clamp per EC 63124 and Replace Piping (note: Q Class C Portion/Pipe Replacement)
- WO 00803679-02, Leak Repair Pipe per EC 63124
- WO 00803679-04, Remove Floor Plugs for Waste Gas Leakage Trouble Shooting
- WO 00803679-05, Removing/Reinstalling Floor Plugs in WPB and RAB as Directed by Engineering
- WO 00803679-06, Replace Elbow Up-Stream of Valve 3WG-20 and Pipe Between Elbow and Tee Down Stream of 3WG-217 (note: Q Class A Portion/Pipe replacement)
- WO 00883914-01, Perform MST-I0378 Plant Vent Stack Accident Monitor RM 21AV 35091SA Calibration
- WO 00890667-01, EPT-400 E-19 Failed to Achieve Minimum Req. Airflow Rate
- EST-400, E-13-1X-SB FHB Emergency Exhaust Tests (Rev. 16, Attachments 2, 3, 4, 5, 6, 7, 8, and 15), multiple dates (June 06)
- EPT-400, E-17 RAB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 6, 7, and 12), multiple dates (July and August 06; Failed Test)
- EPT-400, E-17 RAB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 5, 6, 7, 12 and 25), multiple dates (October 06)
- EPT-400, E-19 RAB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 6, 7, and 13), multiple dates (August 06)
- EPT-400, E-19 RAB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 5, 6, 7, 13 and 25), multiple dates (October 06)
- EPT-400, E-45 WPB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 5, 6, 7, 13, 14 and 25), multiple dates (January and February 07)

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- EPT-400, E-46 WPB Normal Exhaust Tests (Rev. 13, Attachments 2, 3, 4, 5, 7, 14 and 25), multiple dates (January and February 07)
- EST-400, E-6-1A-SA RAB Emergency Exhaust Tests (Rev. 16, Attachments 2, 3, 4, 5, 6, 7, 8, 10, and 17), multiple dates (November 06)
- EPT-400, S-1-1A&B Exhaust Tests (Rev. 13, Attachments 2, 5, 6, 7, 21, 22 and 25), multiple dates (May and June 06)
- OP-119, Rev. 16, Attachment 7 - WPB Stack 5A Estimated Flow Rates (used when flow rate monitors are out of service), dated 11/20/06
- ERC 01 009, Evaluation of Lower Limit of Detection of Radioactivity in Sewage Sludge, Rev. 0, dated 11/15/01
- Chemistry LSC QC (H-3 Bkg., H-3 Eff., C-14 Bkg., C-14 Eff.) Charts (05/07) to dated 06/29/07
- Chemistry A/B Counters (units Tennelec 1, 2, and 3) Alpha Bkg., Alpha Source Check, Beta Bkg., and Beta Source Check QA Histograms (dates 01/06 to 06/07)
- Chemistry HPGE Canberra Counters (units 1, 2, 3, and 4) Total Counts, 122 KeV/779KeV/1408 KeV peak energy, 122 KeV/779KeV/1408 KeV FWHM QA Histograms (dates 12/05 to 06/07)

### CAP Documents

- 00147195, Environmental Risk Assessment Report (Self-Assessment)
- 00180278, Triennial Laboratory QA/QC Review
- 00216351, HNP REMP Activities and HNP Groundwater Protection Initiative Implementation
- HNAS-06-024, Harris Environmental and Chemistry Assessment, dated 04/25/06
- NCR 00180434, AOP-009 Entry Due to Leak in Waste Gas System, dated 01/09/06
- NCR 00202867, SA 180278, W 2, LLD Documentation, 08/10/06
- NCR 00191137, KPI for Particulate Effluent Release Turned Red, 04/14/06
- NCR 00230420, STP Effluent Flow Meter Failure, dated 04/20/07
- NCR 00224995, EMS Software Error Processing High Tritium Permit, dated 03/07/07
- NCR 00222165, Gaseous Effluents-Noble Gas KPI, dated 02/12/07
- NCR 00216371, Crystal River Potential Violation Impact on HNP, dated 12/13/06
- NCR 00213702, Review of Revised NRC Inspection Module, dated 11/17/06
- NCR 00203466, Count Room Unavailable due to VAX/CAS Problems, dated 08/16/06
- NCR 00202866, SA 180278 W 1 Cross Check Programs, dated 08/10/06
- NCR 00196007, Entry Error Code Misleading in Gas Effluent Software, dated 05/30/06
- NCR 00169769, Radioactive Gas Leakage from RWST Vent via 1CS 752, dated 09/19/05
- NCR 00153212, RWST Level Trend Changes, dated 03/10/05
- NCR 00162736, Waste Gas System Leakage, 07/02/05 (includes several Interim Monitoring of Potential Release Point Data Sheet Report)
- NCR 00173330, AOP 009 Entry - Depressurization of Waste Gas Decay Tank J

- NCR 00198385, HNP Groundwater Initiative (NEI Action Plan), 06/25/06
- NCR 00223840, Potential Underground Leak from Fire Protection or Potable Water, 02/27/07
- NCR 00224994, Underground Leak Evaluation, 03/07/07

**Section 2PS3: Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program**

Procedures, Guidance Documents, and Manuals

- Shearon Harris Nuclear Power Plant (SHNPP) Off-Site Dose Calculation Manual, Rev. 17
- EVC-NGGC-0001, Operation and Calibration of HNP Environmental Air Samples, Rev. 6
- EVC-NGGC-0002, Operation of the HNP Portable Water Samplers, Rev. 4
- EVC-NGGC-0003, Radiological Environmental Monitoring Program for HNP, Rev. 5
- EVC-NGGC-0007, The Reporting of Anomalous Results, LLD Requirements, A Priori Calculations, and Interlaboratory Comparison Program Acceptance Criteria Evaluation for Radiological Environmental Samples, Rev. 4

Data and Records Reviewed

- Environmental and Chemistry Technical Note/Report (ERC)-06-002, Evaluation of GW-58, Rev. 0 Review of Current Radiological Monitoring Program, 08/17/06
- Harris Energy & Environmental Center (HEEC) Environmental Cross Check Program Results for: 3<sup>rd</sup> Quarter 2005, 4<sup>th</sup> Quarter 2005, 1<sup>st</sup> Quarter 2006, 2<sup>nd</sup> Quarter 2006, 4<sup>th</sup> Quarter 2006
- Dry Gas Meter Calibration Data for: Air Sampler No. 2225, Rockwell Meter 6957699; Air Sampler No. 2226, Rockwell Meter 6957698; Air Sampler No. 2229, Rockwell Meter 7322223; Air Sampler No. 2230, Rockwell Meter 7322225; and Air Sampler No. 2231, Rockwell Meter 7322226; Air Sampler No. 2232, Rockwell Meter 6957700 and Air Sampler No. 2233, Rockwell Meter 7322231; conducted using Venturi Digital Calibrator Serial Number/ID Number (S/N) 2668/ACL-051, dated 01/29/07
- Dry Gas Meter Calibration Data for: Air Sampler No. 2234, Rockwell Meter 7322232; Air Sampler No. 2758, Rockwell Meter 9320375; Air Sampler No. 2758, Rockwell Meter 9320375; Air Sampler No. 2759, Rockwell Meter 9320376; and Air Sampler No. 2760, Rockwell Meter 9751890; Air Sampler No. 2761, Rockwell Meter 9571891; Air Sampler No. 2762, Rockwell Meter 9571889; and Air Sampler No. 2763, Rockwell Meter 9571894; conducted using Venturi Digital Calibrator SN 2668/ACL-051, dated 10/27/06
- Dry Gas Meter Calibration Data for: Air Sampler No. 2225, Rockwell Meter 6957699; Air Sampler No. 2226, Rockwell Meter 6957698; Air Sampler No. 2229, Rockwell Meter 7322223; Air Sampler No. 2230, Rockwell Meter 7322225; and Air Sampler No. 2231, Rockwell Meter 7322226; Air Sampler No. 2232, Rockwell Meter 6957700; Air Sampler No. 2233, Rockwell Meter

- 7322231 and Air Sampler No. 2234, Rockwell Meter 7322232; conducted using Venturi Digital Calibrator S/N 2668/ACL-051, dated 04/28/06
- Dry Gas Meter Calibration Data for: Air Sampler No. 2231, Rockwell Meter 7322226; Air Sampler No. 2232, Rockwell Meter 6957700; Air Sampler No. 2758, Rockwell Meter 9320375; Air Sampler No.2759, Rockwell Meter 9320376; and Air Sampler No. 2760, Rockwell Meter 9571890; Air Sampler No. 2761, Rockwell Meter 9571891; Air Sampler No. 2762, Rockwell Meter 9571889; and Air Sampler No. 2763, Rockwell Meter 9571894; conducted using Venturi Digital Calibrator S/N 2668/ACL-051, dated 10/11/05
- Calibration Data Sheet, Pressure Calibrator D-812, SN 2668, Flow Standard CY 2005, Radiological Environmental Monitoring TLD Report, and Radiological Monitoring Analysis Report CY 2006, Radiological Environmental Monitoring TLD Report, and Radiological Monitoring Analysis Report
- Work Order (WO) Package 00964161 01, Perform Maintenance Periodic Test (MPT) - I0129, Meteorological Tower Equipment Calibration, 03/16/07
- WO Package 00835712 01, Perform MPT - I0129, Meteorological Tower Equipment Calibration, 09/15/06
- WO Package 00761767 01, Perform MPT - I0129, Meteorological Tower Equipment Calibration, 03/27/06
- WO Package 00759611 01, Perform MPT - I0129, Meteorological Tower Equipment Calibration, 10/05/05
- WO Package 00994251 01, General Inspection of Met Tower Equipment, 06/05/07
- WO Package 01005479 01, General Inspection of Met Tower Equipment, 07/03/07

#### CAP Documents

- NCR 00192324, Air Sampler (AC/AP)-1 Power Outage on April 24, 2006, 04/26/06.
- NCR 00193379, Environmental water compositor found unplugged, 05/03/06
- NCR 00194215, Interlaboratory comparison program evaluation method, 05/11/06
- NCR 00196152, Missing broadleaf samples, 05/31/06
- NCR 00196460, Revise Environmental Program Procedures for consistency with ODCM, 06/05/06
- NCR 00197343, Power outage at air samplers 26 and 47, 06/13/06
- NCR 00200988, Power outage of HNP air sampler No. 4, 07/24/06
- NCR 00204354, Missing July food crop samples, 08/25/06
- NCR 00204370, Revision to EVC-NGGC-0012 for longer count times to meet apriori LLDs, 08/25/06
- NCR 00204593, Missing June food crop samples, 06/08/06
- NCR 00208126, Missing HNP food crop samples for August and September, 10/03/06
- NCR 00214643, I-131 detected in Cape Fear River, 11/28/06
- NCR 00224688, HNP air sampling stations 26 and 47 power outage, 03/06/07
- NCR 00225713, Malfunctioning Water Samplers, 03/13/07



- NCR 00225724, Failure to adequately revise procedure, 03/13/07
- NCR 00226140, Individual measurements outside acceptable range for cross-checks, 03/16/07
- NCR 00227414, Missing broadleaf samples, 03/27/07
- NCR 00227423, Missing food crop samples, 03/27/07
- NCR 00229890, HNP air samplers/water sampler power outage, 04/17/07
- NCR 00230012, Telemetry malfunction during power outage, 04/18/07
- NCR 00230699, Missing Broadleaf Samples, 04/24/07
- NCR 00230759, HNP REMP water sample composite incomplete, 04/24/07
- NCR 00233020, I-131 detected in Cape Fear River samples, 05/14/07
- NCR 00233375, Missing HNP food crop samples May 2007, 05/17/07
- NCR 00233912, HNP broadleaf sample unavailability, 05/22/07
- NCR 00235214, Power interruption at HNP air sampler location No. 47, 06/04/07
- NCR 0026140, Third and fourth quarter 2006 Environmental Cross Check Results Outside of acceptable Criteria Range.
- NCR 00235520, REMP Air Sampler Design Improvement, 06/06/07
- NCR 00239267, Evaluate Options for Operation of the HNP REMP Water Composite Sampling Equipment to Provide for Improved Consistency in Volume of Water Sampled, 07/12/07

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

- NEI 99-02, Regulatory Assessment Performance Indicator Guideline
- Calculation HNP-F/PSA-0068, NRC Mitigating System Performance Index Basis Document for Harris Nuclear Plant

#### **Procedures, Guidance Documents**

- REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 6

#### **Records and Data**

- Monthly PI Reports, April 2006 - May 2007
- OWP-RM LCO Action Log (Plant Vent Stack Monitor) Sheet 61 of 91, Rev. 27, dated 07/17/06
- OWP-RM LCO Action Log (Stack Flow Rate Monitor) Sheet 56 of 91, Rev. 27, dated 11/19/06
- OWP-RM LCO Action Log (Waste Process Bldg Stack Monitor) Sheet 72 of 91, Rev. 27, dated 03/18/07
- RETS/ODCM Radiological Effluent Occurrence Data Sheets and Supporting Information for April 2006, May 2006, June 2006, July 2006, August 2006, September 2006, October 2006, November 2006, December 2006, February 2007, March 2007, April 2007,

CAP Documents

- AR 00193301, A tri-nuclear filter was improperly tied off along the reactor cavity edge, 5/3/06
- AR 00206438, Appropriate HP coverage was not provided for workers entering containment, 9/15/06
- AR 00220433, Trend noted for security officers failing to respond to electronic dosimeter alarms, 1/26/07

**Section 4OA2: Identification and Resolution of Problems**

- CAP-NGGC-0200, Corrective Action Program.

**Section 4OA3: Event Follow-up**

- OP-139, Service Water System
- EOP-EPP-004, Reactor Trip Response
- AOP-006, Turbine Generator Trouble
- EOP-EPP-005, Natural Circulation Cooldown
- AOP-025, Loss of One Emergency AC Bus (6.9 KV), or One Emergency DC Bus (125)