



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

October 30, 2009

Mr. Christopher L. Burton
Vice President
Carolina Power and Light Company
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 05000400/2009004**

Dear Mr. Burton:

On September 30, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed integrated inspection report documents the inspection results, which were discussed on October 1, 2009, with you and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program (CAP), the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC's Enforcement Policy. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial 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 addition, if you disagree with the characterization of the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II and the NRC Resident Inspector at the Shearon Harris facility. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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) 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/

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

Docket Nos.: 50-400
License No.: NPF-63
Enclosure: NRC Inspection Report 05000400/2009004
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to Christopher L. Burton from Randall A. Musser dated October 30, 2009

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED
INSPECTION REPORT 05000400/2009004

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/2009004

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, 2009 through September 30, 2009

Inspectors: J. Austin, Senior Resident Inspector
P. Lessard, Resident Inspector
P. O'Bryan, Senior Resident Inspector, Brunswick

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

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2009004; July 1, 2009 – September 30, 2009; Shearon Harris Nuclear Power Plant, Unit 1; Identification and Resolution of Problems.

The report covered a three month period of inspection by resident inspectors. One Green Non-Cited Violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 0305, Operating Reactor Assessment Program; and findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program," for the licensee's failure to maintain an adequate training program for personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. The licensee's training program was inadequate because the means to maintain QC inspector proficiency and the QC continuing training program failed to ensure that QC inspectors employed appropriate inspection techniques. This failure was manifested in three separate quality control electrical verification errors during plant modifications made in April and May 2009. The licensee entered this issue into their CAP as action request (AR) #341355. As corrective action, the licensee correctly reinstalled and verified the modifications to be in accordance with plant design. Additionally, the licensee committed to revise and/or create procedures to institutionalize QC training in an initial training and certification program, as well as a continuing training program.

This violation was more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. This finding is associated with the Design Control attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Attachment 4 of IMC 0609, the significance of this finding was determined to be of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality, did not represent a loss of system safety function, did not represent actual loss of safety function of a single train for longer than its Technical Specification (TS) Allowed Outage Time, did not represent an actual loss of safety function of one or more non-TS Trains of equipment designated as risk-significant, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect of Supervisory and Management Oversight, as described in the Work Practices component of the Human Performance cross-cutting area because the lack of oversight and engagement by management resulted in the inadequate QC training program (H.4(c)). (Section 4OA2)

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B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near Rated Thermal Power (RTP) for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed three partial system walkdowns of the following risk-significant systems:

- “B” Emergency Diesel Generator (EDG) starting air system on August 11, 2009, in preparation for removing “A” EDG from service for scheduled maintenance;
- “A” Emergency Service Water (ESW) system while the “B” ESW system was inoperable for maintenance on August 31, 2009;
- “B” EDG following maintenance on September 3, 2009.

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, applicable portions of the Updated Final Safety Analysis Report (UFSAR), TS requirements, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Documents reviewed are listed in the attachment.

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

- AR #350078, Pinhole Leak on “A” ESW Booster Pump Recirculation Piping

Enclosure

- AR #350404, Pinhole Leak on “B” ESW near 1SW-1365 (“B” Boron Thermal Regeneration System Chiller Isolation Valve)

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Resident Inspector Tours

a. Inspection Scope

The inspectors conducted six fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Reactor Auxiliary Building (RAB), 190' Elevation, "A" Residual Heat Removal (RHR) and Containment Spray (CT) Pump Room and Floor Drain Pump Room;
- RAB, 190' Elevation, “B” RHR and CT Pump Room and Equipment Drain Pump Room;
- RAB, Elevation 236', 1C Charging Safety Injection Pump Transfer Switch and Charging Safety Injection Pump Rooms and RHR Heat Exchanger Rooms;
- RAB, 236' Elevation, Component Cooling Water and Auxiliary Feedwater Area;
- RAB, 216' Elevation, Mechanical Penetration Area; and
- RAB, 261' Elevation, Charcoal Filter Areas.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program.

1R11 Licensed Operator Requalification Program.1 Quarterly Reviewa. Inspection Scope

On September 28, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The simulator scenario included a main turbine generator excitation control malfunction, a pressurizer level indicator failure, a reactor trip/steam leak and failure of the safety injection system to inject. The inspectors evaluated the following areas:

- Licensed operator performance;
- Crew's clarity and formality of communications;
- Ability to take timely actions in the conservative direction;
- Prioritization, interpretation, and verification of annunciator alarms;
- Correct use and implementation of abnormal and emergency procedures;
- Control board manipulations;
- Oversight and direction from supervisors; and
- Ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectivenessa. Inspection Scope

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the three issues listed below. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

The inspectors evaluated degraded performance issues involving the following risk significant components:

- Historical Performance and Corrective Action Plan for Containment Air Handler 3 (AH-3);
- AR #353494, "B" Emergency Diesel Generator Starting Air Pressure Switch (PS-2471B2); and

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- AR #3350035, Diesel Generator Fuel Oil Day Tank Relief Valve (1DF0-176).

The inspectors focused on the following attributes:

- Implementing appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- Characterizing system reliability issues for performance;
- Charging unavailability for performance;
- Trending key parameters for condition monitoring;
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification;
- Verifying appropriate performance criteria for structures, systems; and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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

- AR #208929, AH-3A Circuit Breaker Failure
- AR #273348, AH-3B Failed in Fast Speed
- AR #277822, AH-3B Failed in Fast Speed
- AR #306693, AH-3A Failed to Start in Fast Speed

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 evaluation and management of plant risk for the six maintenance and emergent work activities affecting risk-significant equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Delay of a scheduled Main Steam/Feedwater Flow Loop 1 Channel Calibration (MST-I0016) due to a declared thunderstorm warning on July 13, 2009;
- Yellow risk while "C" Feedwater Regulating Valve (FRV) was in manual to support instrument loop calibrations on July 16, 2009;
- Emergent work due to failure of PI-440, wide range pressure indicator for 1RC-118, low temperature over pressure (LTOP) power operated relief valve on August 10, 2009;
- Scheduled maintenance on both the "B" ESW System and "B" EDG on August 31, 2009;
- Steam leak on the "B" Heater Drain Pump (HDP) suction valve, which required the HDP be removed from service on September 2, 2009; and

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- Delay of a scheduled Steam Generator Narrow Range Channel Operational test (MST-I0148) due to the extension of the maintenance outage for the “A” ESW and “A” EDG on September 17, 2009.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's work week manager, probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

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

- AR #349398, PI-440 LTOP Pressure Input Failure
- AR #356048, Online Risk Management Improvement Opportunity

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors selected the following five potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

- AR #334387, “A” Containment Spray Pump Ran for 50 Minutes without a Suction Source;

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- AR #3461237, B-SB Battery Room Temperature Has Been >79F for More Than 8 Hours;
- AR #353657, Containment Spray Additive Tank Discharge Flow Transmitter Calibration Error as Much as 5.26 Percent of Range;
- AR #350078, Through Wall Leak on the "A" Train ESW Recirculation Piping for the ESW Booster Pump; and
- AR #349084, Turbine Driven Auxiliary Feedwater Condensation Removal Requirements.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following seven post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

<u>Test Procedure</u>	<u>Title</u>	<u>Related Maintenance Activity</u>	<u>Date Inspected</u>
OST-1073	1B-SB Emergency Diesel Generator Operability Test	Work order 388771, 1B Diesel Relay R11A Chattering	July 7
OST-1041	"A" Essential Services Chilled Water System Temperature Control Valves (TCV) Operability test, Quarterly Interval	Work Order 1140108, Diagnostic Testing of 1CH-232 (TCV) Following Maintenance	July 20
ORT-1813	Remote Shutdown: Test of Additional Components on the Auxiliary Control Panel (ACP), 18 Month Interval	Work Order 1587186, Indication was Lost When Transferring 43T-37SA (Transfer Relay for the Main Control Room Inlet Damper) to ACP	July 22

OST-1215	ESW System Operability Train "B", Quarterly Interval	Work Order 1020764, Testing Following Maintenance on 1SW-118 (Service Water Return Isolation Valve for Air Handlers 1 and 4)	August 6
LP-T-6507A	Component Cooling Heat Exchanger/Pumps AH-6 (1A-SA) Area Temperature	Work order 1070661, Calibrate Time Delay Relays	August 11
OST-1124	Train 6.9 KV Emergency Bus under Voltage Trip Actuation Device Operation	Work order 1060922, Replace Signal Converter, Ramp Generator	August 27
MST-1001	Train "A" Solid State Protection System (SSPS) Activation Logic and Master Relay Test	Work order 398526 Trouble Shoot SSPS Failure	September 14

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing, and test documentation was properly evaluated. The inspectors evaluated the activities against TS and the UFSAR to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them into the corrective action program and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the attachment.

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

- AR #346539, Incorrect Revision of E-5523.000 (Remote Shutdown Components) in Main Control Room

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- AR #346377, Post Maintenance Testing Not Able to be Performed as Scheduled

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Testing

a. Inspection Scope

For the four surveillance tests below, the inspectors observed the surveillance tests and/or reviewed the test results for the following activities to verify the tests met TS surveillance requirements, UFSAR commitments, inservice testing requirements, and licensee procedural requirements. The inspectors assessed the effectiveness of the tests in demonstrating that the SSCs were operationally capable of performing their intended safety functions.

- OST-1119, Containment Spray Operability Test Train "B", Quarterly Interval Modes 1-4 on September 21, 2009;
- OST-1021, Daily Surveillance Requirements, Daily Interval Modes 1-2 on August 31, 2009;
- OST-1107, Emergency Core Cooling System (ECCS) Flow Path and Piping Filled Verification Monthly Interval Modes 1-2-3-4-5 on September 26, 2009; and
- OST-1073, 1B-5B Emergency Diesel Generator Operability Test, September 2, 2009.

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

- AR #298278, Minor Leak from Drain Hose during OST-1107;
- AR #298677, Deficiencies Identified During Generic Letter 08-01 Evaluation; and
- AR #357263, 1RH-32/33 (High Point Vents) Vent Point Found Plugged During OST-1107.

b. Findings

No findings of significance were identified.

.2 In service Testing (IST) Surveillance

a. Inspection Scope

The inspectors reviewed the performance of OST-1190, Spent Fuel Pool Cooling System Train "B" Unit 1 IST Quarterly Interval on September 22, 2009 to evaluate the effectiveness of the licensee's American Society of Mechanical Engineers (ASME)

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Section XI testing program for determining equipment availability and reliability. This surveillance satisfies the IST requirements for 1SF-13 (1&4 B-SB Fuel Pool Cooling Pump Discharge Valve), 1SF-3 (1&4 B-SB Fuel Pool Cooling Pump Discharge Check Valve), and the 1&4 B-SB Fuel Pool Cooling Pump. The inspectors evaluated selected portions of the following areas:

- Testing procedures and methods
- Acceptance criteria
- Compliance with the licensee's IST program, TS, selected licensee commitments, and code requirements
- Range and accuracy of test instruments
- Required corrective actions

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

- AR #356484, Operations Procedure Performance Transcription Errors

b. Findings

No findings of significance were identified.

1EP6 Emergency Planning Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on August 4, 2009, to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E.

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

- AR #349684, During 09-03 EP Drill the EM-MCR did not meet expectations;
- AR #348991, EP-09-03 Drill Objective A24 was not met; and
- AR #348953, Failure of Objective EP-DED-004 during ER Drill 09-03.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

To verify the accuracy of the PI data reported to the NRC, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, Regulatory Assessment Indicator Guideline.

Mitigating Systems Cornerstone

- Mitigating Systems Performance Index, Emergency AC Power System
- Mitigating Systems Performance Index, Residual Heat Removal System
- Mitigating Systems Performance Index, Heat Removal System
- Mitigating Systems Performance Index, Cooling Water Systems
- Mitigating Systems Performance Index, High Pressure Injection System

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index performance indicators listed above for the period from the third quarter 2008 through the second quarter 2009. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection reports for the period to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

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

- AR #349756, Operations work procedure - Essential services chilled water
- AR #105520, High head safety injection NRC KPI;
- AR #286265, Cyclic noise from "B" Auxiliary feedwater motor;
- AR #320900, Oil leak on "B" charging safety injection pump (CSIP) oil reservoir;
- AR #331371, Breaker for 1RH-40 (hot leg suction valve) tripped free;
- AR #332141, Emergent unavailability of B-SB 6.9 kV loads;
- AR #310903, "B" CSIP auxiliary oil motor rework;
- AR #318586, C CSIP auxiliary oil pump degraded operation;
- AR #331375, Incorrect control power knife switch opened; and
- AR #312253, A-SA Emergency service water pump lowering seal flow.

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b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of items Entered Into the Corrective Action Program

a. Inspection Scope

To aid in the identification of repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed frequent screenings of items entered into the licensee's corrective action program. The review was accomplished by reviewing daily action request reports.

b. Findings

No findings of significance were identified.

.2 Selected Issue Follow-up Inspection:

a. Scope

The inspectors selected AR #341355, Knowledge Gap Identified with Verification Requirements for Engineering Change Installation, for detailed review. This AR was associated with electrical quality control verification problems that were encountered during the refueling outage in April and May, 2009. 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.

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

- AR #347826, Quality Control (QC) Reviews of Work Orders for Engineering Changes is Deficient;
- AR #347827, Nuclear Oversight (NOS)/QC Implementation of the Corrective Action Program is Deficient;
- AR #347828, NOS/QC Implementation of Operating Experience is Deficient;
- AR #347829, NOS/QC Inspection Data Base use Inconsistent with NOS-NGGC-1000, Nuclear Oversight Conduct of Operations Procedure;
- AR #347830, QC Contractor Certification Package Errors;
- AR #347831, QC Peer Inspector Certification Package Deficient;
- AR #347832, NGGM-PM-0007, Quality Assurance Program Manual, Provides Inadequate Detail;

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- AR #335388 - Jumpers Installed Incorrectly in 1B21-SB-6A AND 1B21-SB-8A;
- AR #334356 - Cable Terminated Incorrectly;
- AR #332378 - Control Wires Terminated at Incorrect Locations in MCC 1B31-SB and ATP 1B-SB;
- AR #332397 - Incorrect Routing and Termination Verification - Event 1 (QC portion of Event Covered in AR #332378);
- AR #334617 - Electrical Inspection Verification Process - Event 2 (QC Portion of Event Covered in AR #334356); and
- AR #335469 - Electrical Inspection Verification Process - Event 3 (QC Portion of Event Covered in AR #335388).

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program," for the licensee's failure to maintain an adequate training program for personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. This inadequate training program resulted in three separate quality control (QC) electrical verification errors during plant modifications made in April and May 2009.

Description: During plant modifications made in April and May 2009, three electrical plant modifications were incorrectly installed and verified as satisfactory by three different QC inspectors. Event #1 involved wires incorrectly routed into electrical cubicle 1B31-SB-14B instead of 1B31-SB-14A. Additionally at the "B" Auxiliary Transfer Panel, one wire was incorrectly terminated while another was not terminated. Event #2 occurred in cubicle 1A21-SA-8C when two similar cables were mistakenly identified. This resulted in the first wire being incorrectly spared and the second wire being incorrectly landed. Event #3 occurred when a work order was interpreted as requiring one electrical jumper between terminals 11 and 12 in cubicle 1B21-SB-8A and a second jumper between terminals 13 and 14 of MCC 1B21-SB-6A. The intent of the step was to install a jumper from 1B21-SB-8A terminal 11 to terminal 13 in cubicle 1B21-SB-6A and install a second jumper from 1B21-SB-8A terminal 12 to terminal 14 in cubicle 1B21-SB-6A. A wiring diagram was attached to the work order illustrating the correct configuration, but was not referred to by the QC inspector.

As these events occurred, the licensee investigated and addressed them with increasing rigor. After conducting interviews and reviewing these investigations, the resident inspectors met with the licensee to discuss questions the NRC developed while following these events and associated investigations. Specifically, the resident inspectors had concerns about the QC training program and the guidance QC inspectors had available to them while performing verifications in the plant. Following these discussions, the licensee opened AR #341355, a priority 1 investigation to explore the issues raised by the NRC as they related to the Quality Assurance program. The following is a brief discussion of the priority 1 investigation which enabled the licensee to confirm the previously mentioned concerns.

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During event #1, the QC inspector was confident that the wires were correctly installed by the craft personnel. The QC inspector decided to deviate from the required method consisting of two verification steps; 1) continuity tests on the wires prior to landing on the terminal strips, and 2) physical inspection of each termination point in each cubicle in lieu of accepting the continuity test as a replacement verification methodology. Additionally, while using the craft for assistance in the verification, the QC inspector did not verify that the craft had landed the test device in the correct cubicle. During event #2, the QC inspector pulled on cables to identify which cable was to be verified as installed correctly. Due to the number and configuration of cables, this was not a reliable method of positive cable identification and the QC inspector failed to properly perform the verification. Finally, in event #3, the QC inspector believed the work order instructions were sufficiently clear and did not refer to the control wiring diagram referenced in the work order to validate the correct installation of the jumpers. The licensee's stated expectation is that QC inspection would require the use of all documents to definitively confirm correct wiring verification.

All three of these events include verification errors made by QC inspectors employing inadequate methods to perform quality related verifications. During the investigation, the incorrect verifications were attributed to two shortcomings in the licensee's QA program. First, the continuing training program for QC personnel has existed primarily through use of newsletters with minimal to no utilization of existing technical training. QC personnel viewed these newsletters as information sharing and not training in accredited training programs. Further, the last newsletter received by Harris QC was in the first quarter of 2008. Interviews with QC inspectors and other plant personnel also confirmed the absence of continuing training. The inspectors and the licensee concluded that personnel were not provided a process to maintain or enhance skills utilized in performance of their job. Second, the means by which the licensee assures that suitable proficiency is achieved and maintained is also inadequate. QC personnel were recertified without any observation or testing of the individual demonstrating the ability to perform the tasks associated with the job function. The inspectors and the licensee also concluded that this methodology to re-certify inspection personnel was not adequate to assess inspector proficiency. The predominant cause for these two shortcomings was the failure to utilize a formal training process to ensure both initial and continuing training are consistently providing QC personnel the necessary skills and knowledge to perform their job.

Supervision and management within the QC organization contributed to the development of the inadequate training program. Section 7.0 of the licensee's Quality Assurance Program Manual, NGGM-PM-0007, and revision 15 specifies that the department head responsible for activities affecting quality must ensure that training of personnel is adequately implemented. However, over an extended period the QC department head failed to ensure that this was achieved. Specifically, the QC Supervisor position was eliminated by the QC department head in 1999 and replaced by a new QC Lead position. However, this change left the QC Lead with no personnel supervisory responsibility and effectively removed one layer of supervision. Additionally, the QC department head failed to identify and correct the lack of continuing training as discussed above. This lack of supervisory oversight and engagement enabled the

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inadequate training program which resulted in the inadequacies to develop within the organization.

Analysis: The licensee's failure to maintain an adequate training program for personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained is a performance deficiency. This performance deficiency resulted in three separate QC electrical verification errors during plant modifications made in April and May 2009. This finding was more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. This finding is associated with the Design Control attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). This finding was assessed using the Phase 1 screening worksheet (Attachment 4 of Manual Chapter 0609, Significance Determination Process) and was determined to be of very low safety significance because it was a deficiency or qualification confirmed not to result in loss of operability of a safety-related structure, system, or component, did not represent a loss of system safety function, did not represent actual loss of safety function of a single train for longer than its TS Allowed Outage Time, did not represent an actual loss of safety function of one or more non-TS Trains of equipment designated as risk-significant, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect of Supervisory and Management Oversight, as described in the Work Practices component of the Human Performance cross-cutting area because the lack of oversight and engagement by management resulted in the inadequate QC training program (H.4(c)).

Enforcement: 10 CFR 50, Appendix B, Criterion II requires, in part, that the licensee shall maintain a quality assurance program with a training program for personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. The licensee's Quality Assurance Program Manual, NGGM-PM-0007, revision 15 specifies that personnel "shall be indoctrinated and trained such that they are knowledgeable in the applicable quality-related procedures and requirements" and that "provisions to assure that these personnel remain proficient shall be made." Contrary to the above, the licensee's QC inspector training program was inadequate to maintain suitable proficiency which resulted in QC inspectors employing inappropriate inspection techniques. This failure was manifested in three separate quality control electrical verification errors during plant modifications made in April and May 2009. As corrective action, the licensee reinstalled and verified the modifications to be in accordance with plant design. Additionally, the licensee committed to revise and/or create procedures to institutionalize QC training in an initial training and certification program, as well as a continuing training program. Because this violation was of very low safety significance and it was entered into the CAP as AR #341355, this violation is being treated as a non-cited violation (NCV), consistent with the NRC Enforcement Policy. This violation is therefore designated as NCV 05000400/2009004-01, "Failure to Maintain an Adequate Quality Assurance Training Program."

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4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 1, 2009, the inspector presented the inspection results to Mr. Burton and other members of the licensee staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

B. Bernard, Superintendent, Security
C. Burton, Vice President Harris Plant
D. Corlett, Supervisor, Licensing/Regulatory Programs
J. Dills, Manager, Operations
K. Harshaw, Manager, Outage and Scheduling
K. Henderson, Plant General Manager
G. Kilpatrick, Training Manager
S. O'Connor, Manager, Engineering
M. Parker, Superintendent, Radiation Protection
B. Parks, Manager, Nuclear Oversight Section
J. Robinson, Superintendent, Environmental and Chemistry
J. Warner, Manager, Support Services

NRC personnel

R. Musser, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000400/2009004-01	NCV	Failure to Maintain an Adequate Quality Assurance Training Program
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LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Partial System Walkdown

“A” ESW system:

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

B EDG Starting Air system:

- Procedure OP-155, Diesel Generator Emergency Power System
- Drawing 2165-S-0633, Simplified Flow Diagram EDG Starting Air System, Sheet 4

B EDG system:

- Procedure OP-155, Diesel Generator Emergency Power System
- Drawing 2165-S-0633, Simplified Flow Diagram Systems, Sheets 1-4

Section 1R05: Fire Protection

- FPP-001 Fire Protection Program Manual
- FPP-004, Transient Combustible Control
- FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements
- FPP-012-02-RAB 190-216, Reactor Auxiliary Building Elevation 190 Fire Pre-Plan, A02 RHR and Containment Spray Room “B”
- FPP-012-02-RAB 190-216, Reactor Auxiliary Building Elevation 190 Fire Pre-Plan, A01 RHR and Containment Spray Room “A”
- FPP-012-02-RAB261, Reactor Auxiliary Building Elevation 261 Fire Pre-Plan, A24 Charcoal Filter Area
- FPP-012-02-RAB261, Reactor Auxiliary Building Elevation 261 Fire Pre-Plan, A25 Charcoal Filter Area
- FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan, A09 Component cooling water and auxiliary feedwater area
- FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan, A16 “A” RHR heat exchanger room
- FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan, A17 “B” RHR heat exchanger room
- FPP-012-02-RAB 190-216, Reactor Auxiliary Building Elevation 216 Fire Pre-Plan, A08 Mechanical penetration area

Section 1R12: Maintenance Effectiveness

- NGG-PMB-RYL-01, NGG Equipment Reliability Template, Control Relays
- ADM-NGGC-0107, Equipment Reliability Process Guideline
- AR #208929, AH-3A Circuit Breaker Failure
- AR #273348, AH-3B Failed in Fast Speed, April 3, 2008

Attachment

- AR #277822, AH-3B Failed in Fast Speed, May 5, 2008
- AR #306693, AH-3A Failed to Start in Fast Speed, November 16, 2008
- Preventative Maintenance Evaluation 148578, Current Control Relay Tasks vs. PM Template
- Preventative Maintenance Evaluation 148920, Current Timing Relay Tasks vs. PM Template
- Preventative Maintenance Evaluation 280784, AH-1, AH-2, AH-3, AH-4 Fan Speed Relay Replacements
- NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants
- ADM-NGGC-0101, Maintenance Rule Program
- NGG-PMB-RLY-01, NGG Equipment Reliability Template, Control Relays
- ADM-NGGC-0107, Equipment Reliability Process Guideline
- Work Order 1346117, AH-3B SA Tripped with no annunciation
- Work Order 1450660, AH-3 A-SA Failed to Start in Hi Speed

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

- WCM-001, On-line Maintenance
- Work order 01599051, MST-I0248 Reactor coolant system wide range pressure failed
- FSAR Section 5.2.2.11, Pressurizer power operated relief valves

Section 1R15: Operability Evaluations

- OPS-NGGC-1305, Operability Determinations
- FSAR 8.3.2 DC Power System
- PLP-114, Relocated technical specifications and design basis requirements
- Containment Spray System Student Text
- DBD-106, Containment Spray System
- Drawing 2165-S-0550, Simplified Flow Diagram Containment Spray System

Section 1R19: Post Maintenance Testing

- Drawing 2165-S-1017, Simplified Flow Diagram HVAC Air Flow System, Containment Building, Fuel handling Building, Reactor Auxiliary Building, Control Room
- Control Wiring Diagram 2166-B-401, Sheets 1081, 1082, 1092, 2942
- OWP-HVAC, Emergency ventilation
- PIC-I105, Time delay relay calibration

Section 1R22: Surveillance Testing

- Drawing 2165-S-0550, Simplified Flow Diagram Containment Spray System
- ISI-800, In-service Testing of Pumps
- ISI-801, In-service Testing of Valves
- Drawing 2165-S-0805, Simplified Flow Diagram Spent Fuel Pool Cooling System

- Drawing 2165-S-1308, Simplified Flow Diagram Emergency Core Cooling System
- Drawing 2165-S-1309, Simplified Flow Diagram Emergency Core Cooling System
- Drawing 2165-S-1310, Simplified Flow Diagram Emergency Core Cooling System
- FSAR 6.3 Emergency Core Cooling System

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

Section 40A2: Identification and Resolution of Problems

- CAP-NGGC-0200, Corrective Action Program
- CAP-NGGC-0201, Self-Assessment and Benchmark Programs, Revision 12
- CAP-NGGC-0202, Operating Experience Program, Revision 14
- CAP-NGGC-0205, Significant Adverse Condition Investigations and Adverse Condition Investigations-Increased Rigor, Revision 9
- CAP-NGGC-0206, Corrective Action Program Trending and Analysis