UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-400/93-04

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-400 Licensee No.: NPF-63

Facility Name: Harris 1

Inspection Conducted: January 23 - February 19, 1993

Inspectors: J. Tedrow, Senior Resident Inspector — 2/26/93 Date Signed

D. Roberts, Resident Inspector — 2/26/93 Date Signed

Accompanying Personnel: R. Watkins, Intern Resident Inspector

Approved by: ~~T.H.~~ Christensen, Chief — 2/26/93 Date Signed
Reactor Projects Section 1B
Division of Reactor Projects

SUMMARY

Scope:

This routine inspection was conducted by two resident inspectors in the areas of plant operations, radiological controls, security, fire protection, surveillance observation, maintenance observation, safety system walkdown, plant nuclear safety committee activities, followup of onsite events, and licensee action on previous inspection items. Numerous facility tours were conducted and facility operations observed. Some of these tours and observations were conducted on backshifts.

Results:

One non-cited violation was identified: Failure to follow requirements specified in a radiation work permit, paragraph 2.b.(4).(b).

The licensee declared an Unusual Event due to plant computer unavailability, paragraph 7.

Due to an increase in reactor coolant system activity, the failed fuel action plan has been implemented, paragraph 2.b.(4).(a).

A survey of the vehicle gates for the security perimeter fence was performed, paragraph 2.b.(5).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Collins, Manager, Operations
J. Cribb, Manager, Quality Control
*C. Gibson, Manager, Programs and Procedures
C. Hinnant, General Manager, Harris Plant
D. Knepper, Project Engineer, Nuclear Engineering Dept.
*T. Morton, Manager, Maintenance
J. Moyer, Manager, Project Assessment
*J. Nevill, Manager, Technical Support
A. Powell, Manager, Harris Training Unit
*W. Seyler, Manager, Outages and Modifications
*H. Smith, Manager, Radwaste Operation
*G. Vaughn, Vice President, Harris Nuclear Project
*W. Wilson, Manager, Spent Nuclear Fuel

Other licensee employees contacted included office, operations, engineering, maintenance, chemistry/radiation and corporate personnel.

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Review of Plant Operations (71707)

The plant continued in power operation (Mode 1) for the duration of this inspection period.

a. Shift Logs and Facility Records

The inspector reviewed records and discussed various entries with operations personnel to verify compliance with the Technical Specifications (TS) and the licensee's administrative procedures. The following records were reviewed: Shift Supervisor's Log; Control Operator's Log; Night Order Book; Equipment Inoperable Record; Active Clearance Log; Grounding Device Log; Temporary Modification Log; Chemistry Daily Reports; Shift Turnover Checklist; and selected Radwaste Logs. In addition, the inspector independently verified clearance order tagouts.

The inspectors found the logs to be readable, well organized, and provided sufficient information on plant status and events. Clearance tagouts were found to be properly implemented. No violations or deviations were identified.

b. Facility Tours and Observations

Throughout the inspection period, facility tours were conducted to observe operations, surveillance, and maintenance activities in progress. Some of these observations were conducted during backshifts. Also, during this inspection period, licensee meetings were attended by the inspectors to observe planning and management activities. The facility tours and observations encompassed the following areas: security perimeter fence; control room; emergency diesel generator building; reactor auxiliary building; waste processing building; turbine building; fuel handling building; emergency service water building; battery rooms; electrical switchgear rooms; technical support center; and the emergency operations facility.

During these tours, the following observations were made:

(1) Monitoring Instrumentation - Equipment operating status, area atmospheric and liquid radiation monitors, electrical system lineup, reactor operating parameters, and auxiliary equipment operating parameters were observed to verify that indicated parameters were in accordance with the TS for the current operational mode.

(2) Shift Staffing - The inspectors verified that operating shift staffing was in accordance with TS requirements and that control room operations were being conducted in an orderly and professional manner. In addition, the inspector observed shift turnovers on various occasions to verify the continuity of plant status, operational problems, and other pertinent plant information during these turnovers.

(3) Plant Housekeeping Conditions - Storage of material and components, and cleanliness conditions of various areas throughout the facility were observed to determine whether safety and/or fire hazards existed.

(4) Radiological Protection Program - Radiation protection control activities were observed routinely to verify that these activities were in conformance with the facility policies and procedures, and in compliance with regulatory requirements. The inspectors also reviewed selected radiation work permits to verify that controls were adequate.

(a) Licensee personnel noticed an increase in RCS activity during the January 7, 1993, power reduction to repair RCS leakage. A significant increase in Iodine activity was noticed which indicated a slight defect of the fuel cladding in one fuel rod. This situation is similar to that discovered during the previous operating cycle when two fuel rods were identified to

be damaged (see NRC Inspection Report 50-400/91-23 for more details on the previous problem). During the last refueling outage in October 1992, the fuel assemblies were ultrasonically tested and two fuel rods were found to be damaged. The two fuel assemblies were reconstituted by replacing the two damaged fuel rods with stainless steel inserts.

The licensee contacted the fuel manufacturer for the Vantage V fuel who has determined that the damage to the fuel rods appears to be related to the fabrication process. The fuel manufacturer is presently performing a root cause analysis for the defects. The licensee has previously decided to change fuel vendors for the next operating cycle and will continue to sample and trend the RCS activity in accordance with the failed fuel action plan.

(b) On February 4, 1993, while observing workers loading radioactive materials into a transportation box for offsite waste disposal, the inspector noticed one worker walk into the box which was posted as a contaminated area. The radiological posting for this area required shoecovers and gloves for entry. The worker, who was without any protective clothing, was assisting two others already inside the container with the sorting of bagged radioactive waste. The two other workers were dressed in protective clothing consisting of lab coats, shoecovers and gloves. One of the two workers already in the box reminded the worker that he should not be inside the box as he was dressed. The improperly dressed individual then exited the area. The inspector brought this observation to the attention of the two Health Physics technicians controlling the activity (who had not seen the incident) who then sent the worker to perform a whole body frisk. The frisk indicated no personnel contamination had occurred. The inspector later checked the associated RWP, General RWP-93-006, and ascertained that the worker had violated this RWP because he was not dressed as posted for the area. Later discussions with licensee management prompted appropriate corrective actions and indicated that the safety significance of this violation was minor since the area had been conservatively posted. The inspector considered the licensee's corrective action to be expeditious and thorough. This NRC identified violation is not being cited because criteria specified in Section VII.B of the Enforcement Policy were satisfied.

NCV (400/93-04-01): Failure to follow requirements specified in a radiation work permit.

(5) Security Control - The performance of various shifts of the security force was observed in the conduct of daily activities which included: protected and vital area access controls; searching of personnel, packages, and vehicles; badge issuance and retrieval; escorting of visitors; patrols; and compensatory posts. In addition, the inspector observed the operational status of closed circuit television monitors, the intrusion detection system in the central and secondary alarm stations, protected area lighting, protected and vital area barrier integrity, and the security organization interface with operations and maintenance.

In response to a request for information from the NRC Regional Office, the vehicle access gates to the protected area were also inspected during a walkdown of the security perimeter fence. The double perimeter fence has seven vehicle access gates, each one consisting of two sliding gates which are secured with a chain and lock. Three of these vehicle gates are operated manually while the other four have electrical motors to assist in gate operation. The main vehicle access gate is continuously manned with a guard. The inspectors found the gates and perimeter fence to be in excellent condition.

(6) Fire Protection - Fire protection activities, staffing and equipment were observed to verify that fire brigade staffing was appropriate and that fire alarms, extinguishing equipment, actuating controls, fire fighting equipment, emergency equipment, and fire barriers were operable.

During a routine tour, the inspector noted that a fire hose station (FH-9-62), located on elevation 216 of the fuel handling building, was situated inside of a contaminated area. This potential obstruction was discussed with licensee health physics and radwaste personnel. The inspector was informed that from a radiological standpoint, fire protection turnout gear was considered to provide adequate radiological protection and that fire fighters would not be hampered from using this hose to respond to a fire in this area. Licensee management was encouraged to decontaminate the affected area so that the hose station would be located outside of the contaminated area.

The inspectors found plant housekeeping and the material condition of plant components to be good. The licensee's adherence to radiological controls, security controls, fire protection requirements, and TS requirements in these areas was satisfactory.

c. Review of Nonconformance Reports

Adverse Condition Reports (ACRs) were reviewed to verify the following: conformance to technical specifications, corrective actions and generic items were identified and items were reported as required by 10 CFR 50.73.

3. Surveillance Observation (61726)

Surveillance tests were observed to verify that approved procedures were being used; qualified personnel were conducting the tests; tests were adequate to verify equipment operability; calibrated equipment was utilized; and TS requirements were followed. The following tests were observed and/or data reviewed:

- MST-I0123 Pressurizer Pressure P-0456 Operational Test
- MST-I0132 Main Steam Line Pressure, Loop 3 P-0495 Operational Test
- MST-I0145 Steam Generator A Narrow Range Level Loop (L-0476) Operational Test
- MST-I0175 Steam Generator A Narrow Range Level Loop (L-0473) Operational Test
- OST-1008 1A-SA RHR Pump Operability Quarterly Interval
- OST-1070 Axial Flux Difference Monitoring and Logging

The performance of these procedures was found to be satisfactory with proper use of calibrated test equipment, necessary communications established, notification/authorization of control room personnel, and knowledgeable personnel having performed the tasks. As discussed in paragraph 5 of this report, the RHR pump was on an increased test frequency due to excessive pump vibration in the alert range. During the RHR pump test on February 17, 1993, vibration data indicated degrading pump bearing performance and was above the required action range specified on the test procedure. Licensee operations personnel appropriately declared the pump inoperable pending data evaluation by system engineering and inservice testing personnel. Diagnostic vibrational test data was analyzed which indicated satisfactory pump bearing performance. The pump was subsequently declared operable but left on the increased test frequency. No violations or deviations were observed.

4. Maintenance Observation (62703)

The inspector observed/reviewed maintenance activities to verify that correct equipment clearances were in effect; work requests and fire prevention work permits, as required, were issued; and TS requirements were being followed. Maintenance was observed and work packages were reviewed for the following activities:

- Packing adjustment on main steam power operated relief valve 1MS-58 in accordance with procedure CM-M0187, Control Components, Inc. (CCI) Main Steam Power Operated Relief Valve (PORV) Disassembly, Inspection, Maintenance, and Reassembly, and post maintenance testing in accordance with procedure OST-1079, Containment Isolation Valves Inservice Inspection Test.

- Replace manual override plate on motor operated valve 1AF-34 and post maintenance testing in accordance with procedures PIC-I058, Calibration Check and Stroking of a Milliampere Hydramotor Actuator Model NH-92 & 94 (Direct Acting), and OST-1077, Auxiliary Feedwater Valves Operability Test Quarterly Interval.

- Repair of steam leak on valve 1MS-291.

- Replace o-ring on duplex lube oil filter for EDG 1A in accordance with procedure MPT-M0028, Emergency Diesel Generator Lube Oil Full Flow Filter Inspection and Cleaning.

- Replace fuel oil system pressure indicator and perform post maintenance testing in accordance with procedure MST-I0493, Diesel Generator 1A-SA Fuel Oil Instruments Calibration.

- Inspect/test start air distributor system on EDG 1A to verify correct cylinder poppet valve sleeve alignment as followup to TDI/Enterprise 10 CFR Part 21 notice 92-162, and post maintenance test in accordance with OST-1013, 1A-SA Emergency Diesel Generator Operability Test Monthly Interval.

The performance of work was satisfactory with proper documentation of removed components and independent verification of the reinstallation. During the EDG start air distributor test the inspector observed that the mechanic was especially sensitive to the requirement to perform the job in accordance with the approved work ticket and that he took prudent action to obtain the necessary instrumentation when it could not initially be verified that the job was being performed under the correct system setup parameters. No violations or deviations were identified.

5. Safety Systems Walkdown (71710)

The inspectors conducted a walkdown of the low pressure safety injection system to verify that the lineup was in accordance with licensee requirements for system operability and that the system drawings and valve checklist accurately depicted "as built" plant conditions.

Included in this walkdown was a review of instrument calibration tests and inservice testing results for system components. The inspectors noticed that the RHR pump differential pressure instruments (PDT-5450 A/B) were not included in the licensee's routine preventive maintenance program for calibration. These instruments had been added to the system in November 1991, for RCS reduced inventory monitoring. During this system modification, the differential pressure instruments had been

inadvertently left out of the preventive maintenance program. However, the inspectors did find that the instruments had recently been calibrated in October 1992, under corrective maintenance for a main control room annunciator problem. The inspectors therefore concluded that instrument accuracy was not in question. Licensee personnel subsequently added the instruments to the preventive maintenance program and showed the inspectors that the modification process had been strengthened to include a specific check by the system engineer to ensure that applicable components are added to the program.

During the inservice testing review, the inspectors noticed that vibration measurements on the "A" RHR pump had an increasing trend and were presently in the alert range which required an increased pump testing frequency. This item was discussed with the system engineer who stated that more detailed vibration measurements for diagnostic purposes would be taken during the next pump test. The inspectors also informed the system engineer of recent industry problems with this type of pump as noted in NRC Information Notice 93-08: Failure of Residual Heat Removal Pump Bearings Due to High Thrust Loading.

The system's general material condition was satisfactory except for some minor leakage around the casing studs for the "A" RHR Pump. Additionally, some insulation and shielding had been removed from the "A" RHR Pump as well as some sections of the system piping near snubbers. These observations were discussed with licensee management. The pump was decontaminated and inspections for leakage were performed during a subsequent pump inservice test. Although no leakage was observed during this test, pump discharge pressure, in this test alignment, was well below the higher pressures experienced during shutdown operation. Licensee personnel were encouraged to continue monitoring this situation.

No violations or deviations were identified.

6. Review of Plant Nuclear Safety Committee Activities (40500)

The inspectors attended selected PNSC meetings to observe committee activities and verify TS requirements for committee composition, duties and responsibilities. Meeting minutes were also reviewed to verify that activities were accurately documented. During the January 27 meeting the committee discussed a proposed plant modification regarding support requirements for MSIV work. This meeting was conducted and documented satisfactorily. No violations or deviations were identified.

7. Followup of Onsite Events (93702)

At 8:13 a.m. on February 6, 1993, the licensee declared an Unusual Event due to the inability of the plant process computer to perform its function for a time period in excess of four hours. At 4:12 a.m. on February 6, the plant computer failed. Although computer technicians were called in to troubleshoot the problem, they were unable to restore

the system to operable status until 12:30 p.m. the same day. The computer system consists of two separate central processing units (CPU). As part of an ongoing six year computer upgrade plan, the "B" CPU was being modified to a reduced instruction set computer and had been out of service pending acceptance testing. The six year plan to upgrade the computer was implemented following reliability concerns discussed in NRC Inspection Report 50-400/92-07. Previous hardware improvements had been successful in improving computer reliability. The licensee plans to continue computer upgrade improvements to replace the "A" CPU and install a new operating system for both CPUs. This action is expected to be completed by the end of May 1993. The inspectors reviewed the licensee's emergency plan and compensatory actions taken and found the licensee's action to be appropriate. To alleviate future unnecessary emergency plan entries for an inoperable computer, the licensee has decided to declare a computer outage until March 1, 1993, while computer improvements are being performed. Appropriate compensatory measures were implemented which included designated personnel in the technical support center and emergency operations facility to receive and record the data normally available from the computer.

Licensee personnel conducted a subsequent internal self-assessment of this event. County emergency management personnel misunderstood the initial event classification as an Alert. The licensee determined that written follow-up event notifications were not transmitted to the county after the verbal notification. This action could have quickly corrected the misunderstanding. The licensee is presently developing corrective action to address the deficiencies identified by the self-assessment.

8. Licensee Action on Previously Identified Inspection Findings (92702 & 92701)

(Closed) P2191-08: This 10 CFR Part 21 report notified the licensee of a potential problem with intake and exhaust valve retainers which are subcomponents of the cylinder head assemblies in both emergency diesel engines. Specifically, the retainers were long enough to allow a failed intake or exhaust valve to fall into the combustion chamber and come into contact with the top of the associated piston as the engine rotated. This could have caused engine failure or damage. The vendor redesigned the retainer so that it would limit the travel distance of a failed valve. During refueling outage 3, the retainers were replaced in accordance with plant modifications PCR-5060, EDG 1B-SB Improved Valve Spring Retainers, and PCR-5061, EDG 1A-SA Improvement Valve Spring Retainers

9. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on February 19, 1993. During this meeting, the inspectors summarized the scope and findings of the inspection as they are detailed in this report, with particular emphasis on the Non-Cited Violation addressed below. The licensee representatives acknowledged the inspector's comments and did not identify as

proprietary any of the materials provided to or reviewed by the inspectors during this inspection. No dissenting comments from the licensee were received.

Item Number	Description and Reference
400/93-04-01	NCV: Failure to follow requirements specified in a radiation work permit, paragraph 2.b.(4).(b).

10. Acronyms and Initialisms

ACR	-	Adverse Condition Report
AFW	-	Auxiliary Feedwater
CFR	-	Code of Federal Regulations
CPU	-	Central Processing Unit
EDG	-	Emergency Diesel Generator
MSIV	-	Main Steam Isolation Valve
NCV	-	Non-Cited Violation
NRC	-	Nuclear Regulatory Commission
PCR	-	Plant Change Request
PNSC	-	Plant Nuclear Safety Committee
PORV	-	Power Operated Relief Valve
RHR	-	Residual Heat Removal
RCS/RC	-	Reactor Coolant System
RWP	-	Radiation Work Permit
TDI	-	Transamerica Delaval, Inc.
TS	-	Technical Specification