

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-400
License No: NPF-63

Report No: 50-400/99-03

Licensee: Carolina Power & Light (CP&L)

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road
New Hill, NC 27562

Dates: April 25 - May 29, 1999

Inspectors: J. Brady, Senior Resident Inspector
R. Hagar, Resident Inspector

Approved by: B. Bonser, Chief, Projects Branch 4
Division of Reactor Projects

Enclosure

9907080079 990628
PDR ADOCK 05000400
Q PDR

EXECUTIVE SUMMARY

Shearon Harris Nuclear Power Plant, Unit 1 NRC Inspection Report 50-400/99-03

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a five-week period of resident inspection.

Operations

- The conduct of operations was in accordance with applicable procedures (Section O1.1).
- Quality assurance activities reviewed found that Nuclear Assessment Section and Performance Evaluation Support audits identified issues in need of corrective action. Condition report (CR) review meetings were effective in properly classifying CRs and providing management focus on important CRs (Section O7.1).

Maintenance

- Maintenance and surveillance test activities observed were properly conducted (Section M1.1 and M2.1)
- A violation was identified for failure to follow procedure. An inadvertent containment spray pump start resulted when maintenance technicians failed to connect test instrument leads across the terminals specified in the surveillance test procedure (Section M2.2).
- Licensee activities to address an unresolved item related to a component cooling water containment isolation valve resulted in the initiation of several condition reports and a Licensee Event Report (Section M8.1).

Engineering

- Engineering activities were conducted in accordance with plant procedures (Section E1.1).

Plant Support

- Radiological control, chemistry, and security, activities observed were conducted in accordance with plant procedures (Sections R1.1, S1.1).
- Observation of fire brigade and off-site fire department response to a fire in the warehouse area was acceptable and the fire was quickly extinguished (Section F1.1).

Report Details

Summary of Plant Status

Unit 1 began this inspection period at 100 percent power, and remained at that power level throughout the period.

I. Operations

O1 **Conduct of Operations**

O1.1 General Comments

a. Inspection Scope (71707)

The inspectors conducted frequent reviews of ongoing plant operations including control room tours, shift turnovers, and observation of operations surveillance activities. The inspectors also conducted frequent tours of the facility to verify equipment condition, housekeeping, and proper use of clearances.

b. Observations and Findings

In general, the conduct of operations was professional and safety-conscious. Routine activities were adequately performed. Operations shift crews were appropriately sensitive to plant equipment conditions and maintained a questioning attitude in relation to unexpected equipment responses. Facilities and equipment were maintained, and clearances were installed and removed in accordance with applicable procedures. The inspectors found that equipment status was in accordance with Technical Specification (TS) requirements .

The inspectors observed operator performance in a variety of circumstances and found that both licensed and non-licensed operators participated attentively in pre-job briefs, followed procedural instructions, and used effective place-keeping techniques. The inspectors also observed that the operators effectively used three-way communication techniques. The inspectors concluded that operator knowledge was acceptable and performance was in accordance with applicable procedural requirements.

c. Conclusions

The conduct of operations was in accordance with applicable procedures.

O7 Quality Assurance in Operations

O7.1 General Comments (71707, 40500)

During the inspection period, the inspectors reviewed multiple licensee quality assurance activities, including:

- Condition Reports
- Nuclear Assessment Section (NAS) Audits on Spent Fuel Shipping (HNAS 99-107)
- Performance Evaluation Support (PES) Quarterly Report 99-07-SP-C

Quality Assurance activities reviewed were generally conducted in accordance with plant procedures. The NAS and PES audits reviewed found issues that were in need of corrective action. The inspectors observed that condition reports (CR) were being initiated for those adverse conditions identified. The inspectors observed that the licensee's CR review meetings were effective in properly classifying CRs and providing management focus on important CRs. As noted in Section M8.1, several CRs were initiated by the licensee due to inspector findings.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments (62707)

The inspectors observed all or portions of the following work activities to determine if the activities were being performed in accordance with approved procedures and regulatory requirements, that personnel were appropriately trained and qualified, and that appropriate radiological controls were followed:

<u>WR/JO No.</u>	<u>Description</u>
99-ADMB-1	N42 Gain potentiometer replacement
99-ADJX-1	Remove fuel storage racks for new fuel pool and C fuel pool
99-AEXX004	Steam generator C feedwater bypass control valve loop calibration
99-ADJC-1	RM-11-1 is not communicating with 4 monitors on loop 4

The inspectors found the work performed under these activities to be professional and thorough. All work observed was performed with the work package present and in active use. Technicians were experienced and knowledgeable of their assigned tasks. The

inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present whenever required by procedure. Peer checking and self checking techniques were being used. When applicable, appropriate radiation control measures were in place.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Surveillance Observation (61726)

The inspectors observed all or portions of the following surveillance tests:

<u>Test</u>	<u>Title</u>	<u>Revision</u>
MST-I0320	"Train B Solid State Protection System Actuation Logic and Master Relay Test"	20
MST I0001	"Train A Solid State Protection System Actuation Logic and Master Relay Test"	18
MST-I0128	"Main Steamline Pressure, Loop 2 (P-0484), Operational Test"	6
MST-I0476	"Diesel Generator 1B-SB Starting Air Pressure Calibration"	7

The inspectors found that the testing was adequately performed and conducted in accordance with applicable procedures.

M2.2 Inadvertent Containment Spray Pump Start

a. Inspection Scope (93702, 61726)

The inspectors reviewed the circumstances associated with an inadvertent start of the B containment spray pump on May 21.

b. Observations and Findings

On May 21 at 10:16 a.m., while performing surveillance procedure OST 1095, "Sequencer Block Circuit and Containment Fan Cooler Test Train B," Revision 7, a maintenance technician placed multimeter leads on the wrong terminal points. The terminal points touched (59 and 60) were adjacent to the desired points (58 and 60) and resulted in an inadvertent start of the 1B-SB containment spray pump. Licensee personnel in the area heard the containment spray pump breaker shut and called the control room. Operators observed the control board indications which showed that the pump had started, that flow was not admitted to containment, and that the pump was running on recirculation flow. The pump was secured and the normal standby alignment established. Licensee personnel determined that the pump had run for approximately two minutes. The licensee reported the pump start as an Engineered Safety Features



actuation under 10 CFR 50.72 at 1:52 p.m., but retracted the report on May 25 after a review of the circumstances associated with the event and review of NUREG 1022, Event Reporting Guidelines, 10CFR50.72 and 50.73, Revision 1. The surveillance procedure was later satisfactorily completed. The inspectors found that the final reportability determination was in accordance with NUREG 1022.

The inspectors observed that the licensee placed this event in the corrective action program as CR 99-01442. The inspectors discussed this event with licensee personnel including the control room operators. The inspectors found that licensee personnel failed to follow procedure OST 1095 in that the multimeter leads were connected across the wrong terminals. Step 7.2.7.4 directed taking pre-test data to determine contact status and Table 7 of OST 1095 identified the correct terminals for containment spray pump 1B-SB, including the expected resistance reading in ohms. TS 6.8.1 a requires that the applicable procedures recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978 shall be established, implemented and maintained. RG 1.33 Section 8.b covers surveillance tests listed in the TS. This failure to properly implement a surveillance procedure is considered a violation of Technical Specification 6.8.1a.

The inspectors noted that the licensee restored compliance within a reasonable time after the violation was identified, and placed the violation into the corrective action program to prevent recurrence. Furthermore, the inspectors considered that the violation was not repetitive and was not willful. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR 99-01442. The inspectors have designated this violation as NCV 50-400/99-03-01, containment spray pump start due to failure to follow surveillance procedure.

c. Conclusions

A violation was identified for failure to follow procedure. An inadvertent containment spray pump start resulted when maintenance technicians failed to connect test instrument leads across the terminals specified in the surveillance test procedure.

M8 Miscellaneous Maintenance Issues (92902, 92903)

M8.1 (Open) Unresolved Item (URI) 50-400/99-02-02: failure of a containment isolation valve to close in response to a slave-relay signal. As discussed in section M1.1 of NRC Inspection Report (IR) 50-400/99-02, this URI was opened pending:

- licensee completion of an investigation into whether valve 1CC-176 had been operable when the unit entered Mode 4 at the end of the last refueling outage, and

- the inspectors' review of the licensee's investigation results, and the inspectors' subsequent assessment of the safety and risk significance of not only the failure of 1CC-176 to close in response to a slave-relay signal (as discussed in Section M1.1 of IR.50-400/99-02), but also of the findings related to the licensee's investigation.

As was noted in the referenced report, with the completion of the "Apparent Cause Report" associated with CR 98-03211, the licensee completed their investigation into the failure of containment-isolation valve 1CC-176 to close during a December 6, 1998, slave-relay test. However, as noted in Section M1.1, the inspectors had questioned the Mode 4 operability of 1CC-176, and the generic implications of that valve's failure to shut. In response to the inspectors' questions, the licensee initiated CR 99-00976 and a supplemental investigation. Also, as described in Section E7.1 of the referenced report, the inspectors' review of CR 98-03211 concluded that the licensee's investigation into related circumstances had not been thorough.

Related developments during this inspection period include the following:

- On May 6, the licensee determined that on November 22, 1998, 1CC-176 had failed to close during a test that was conducted in accordance with procedure OST-1825, "Safety Injection Actuation Switch Test 18 Month Interval Modes 5, 6 or Defueled," Revision 1. During that test the test coordinator noted that the valve failed to shut however closure of the valve was not required by the acceptance criteria for the test, and the test coordinator deleted the valve from the test and did not initiate any corrective actions. The licensee initiated CR 99-01316 to address this issue.

From the observed failures of 1CC-176 to shut during the November 22 and December 6 surveillance tests, the licensee determined that 1CC-176 had in fact not been operable when the unit entered Mode 4 on November 24: This meant that the unit was not in compliance with TS 3.6.3 (in that 1CC-176 was not operable) and TS 4.0.4 (in that TS 4.6.3.1 had not been satisfied) when it entered Mode 4.

- On May 21 in response to the inspectors' conclusion that the investigation associated with CR 98-03211 had not been thorough the licensee initiated CR 99-01440 which stated that the initial investigation into the 1CC-176 failure, as described in the "Apparent Cause Report" associated with CR 98-03211, was not adequate.
- On May 28 the licensee determined that the TS 4.6.3.1 surveillance requirement to verify actuation time had not been satisfied for containment-isolation valve 1CC-202. The licensee identified this as an additional example of the TS 4.6.3.1 violation, and initiated CR 99-01501 to address the issue.
- As noted in Section M1.1 of IR 50-400/99-02, the inspectors had noted that the circuit used to actuate 1CC-176 from the handswitch was different from the circuit used to actuate the valve from the Engineered Safety Features Actuation System (ESFAS) slave relay; some containment-isolation valves (like 1CC-176) are configured such that manual actuation and ESFAS actuation are accomplished through different

circuits, and others are configured such that manual and ESFAS actuations are accomplished through the same circuit. During this period the inspectors found that the surveillance procedures used by the licensee to demonstrate the operability of containment isolation valves did not distinguish between the two actuator circuit configurations. The inspectors found that the surveillance procedures appeared to be adequate to demonstrate the operability of the valves configured such that manual and ESFAS actuations were accomplished through the same circuit. The procedures were not adequate to demonstrate the operability of the valves configured such that manual and ESFAS actuations were accomplished through different circuits. The licensee acknowledged these findings and told the inspectors that this issue would be addressed within the scope of the investigation associated with CR 99-01316.

- The inspectors noted that the corrective actions implemented under WR/JO 98-AIK11 appeared to satisfy the definition of "rework" as defined in procedure MNT-NGGC-0001, "Maintenance Rework Program," Revision 0. However, the inspectors also noted that neither the WR/JO nor CR 98-03211, investigated by engineering, had been coded as "rework". When the inspectors questioned the licensee about this issue on May 21, licensee engineering personnel changed the CR database so that the record for CR 98-03211 would include the "rework" code.

At the end of this inspection period the licensee had initiated but not completed investigations of the post-maintenance test program and the surveillance test procedures (under CRs 99-00976 and 99-01316, respectively), to determine whether and how many other post-maintenance and/or surveillance test procedures were inadequate with respect to satisfying TS surveillance requirements. Pending licensee completion of those actions, and the inspectors' subsequent assessment of the safety and risk significance of this event and the related circumstances, this URI remains open.

III. Engineering

E1 Conduct of Engineering

E1.1 General Comments (37551)

In general, the conduct of engineering was in accordance with plant procedures. Some comments related to URI 50-400/99-02-02 in Section M8.1 relate to engineering performance in the investigation of adverse conditions.



IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 General Comments (71750)

During the conduct of tours and observation of maintenance activities, the inspectors observed radiological controls, and found them to be acceptable. The general approach to the control of contamination and dose for the site was effective. Teamwork between the various departments continued to be a major contributor to the effective control of dose. Primary and secondary chemistry were maintained within TS limits. Chemistry sampling activities were accomplished in accordance with plant procedures.

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

The inspectors observed security and safeguards features and activities during the conduct of plant tours, including:

- general integrity of the protected area barrier
- maintenance of the isolation zones
- illumination levels
- access control
- vital area controls

The inspectors concluded that security and safeguards activities were conducted in accordance with applicable procedures and the Security Plan.

F1 Control of Fire Protection Activities

F1.1 General Comments (71750)

The inspectors observed fire protection equipment and activities during the conduct of tours and observation of maintenance activities. The inspectors observed fire brigade and off-site fire department response to a fire in the warehouse area. The fire was just outside the protected area fence and was caused by a transformer failure which ignited grass in the area. Fire brigade response and off-site fire department response were acceptable and quickly extinguished the fire. The inspectors found the fire protection activities to be acceptable.

V. Management Meetings**X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 7, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED**Licensee**

D. Alexander, Manager, Regulatory Affairs
J. Bates, Superintendent, Environmental and Chemistry
D. Batton, Superintendent, On-Line Scheduling
D. Braund, Superintendent, Security
B. Clark, General Manager, Harris Plant
A. Cockerill, Superintendent, I&C Electrical Systems
J. Holt, Manager, Outage and Scheduling
J. Eads, Supervisor, Licensing and Regulatory Programs
R. Field, Manager, Nuclear Assessment
T. Hobbs, Acting Manager, Operations
M. Keef, Manager, Training
G. Kline, Manager, Harris Engineering Support Services
K. Neuschaefer, Manager, Environmental & Radiation Control
T. Pilo, Superintendent, Radiation Protection
J. Scarola, Vice President, Harris Plant
B. Waldrep, Manager, Maintenance

NRC

B. Bonser, Chief, Reactor Projects Branch 4
R. Laufer, NRR Project Manager

INSPECTION PROCEDURES USED

- IP 37551: Onsite Engineering
- IP 40500 Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
- IP 61726: Surveillance Observations
- IP 62707: Maintenance Observation
- IP 71707: Plant Operations
- IP 71750: Plant Support Activities
- IP 92902: Followup - Maintenance
- IP 92903 Followup-Engineering
- IP 93702: Onsite Response to Events



ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-400/99-03-01 NCV containment spray pump start due to failure to follow surveillance procedure. (Section M2.2)

Closed

50-400/99-03-01 NCV containment spray pump start due to failure to follow surveillance procedure. (Section M2.2)

Discussed

50-400/99-02-02 URI failure of a containment isolation valve to close in response to a slave-relay signal (Section M8.1).