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

July 27, 2000

Carolina Power & Light Company
ATTN: Mr. James Scarola
Vice President - Harris Plant
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Code: Zone 1
New Hill, NC 27562-0165

SUBJECT: HARRIS - NRC INTEGRATED INSPECTION REPORT 50-400/00-02

Dear Mr. Scarola:

On July 1, 2000**,** the Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed report presents the results of that inspection which were discussed on July 7, 2000, with Mr. R. Duncan and other members of your staff.

The inspection was an examination of 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. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel.

The NRC also identified one issue that was evaluated under the significance determination process and was determined to be of very low safety significance (Green). The issue has been entered into your corrective action program and is discussed in the summary of findings and in the body of the attached inspection report. The issue was determined to involve a violation of NRC requirements, but because of its very low safety significance the violation is not cited. If you contest the non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the 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 2.790 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 Public Available Records (PARS) components of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Brian Bonser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report

cc w\encl: (See page 3)

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-400
License No:	NPF-63
Report No:	50-400/00-02
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 2 - July 1, 2000
Inspectors:	J. Brady, Senior Resident Inspector R. Hagar, Resident Inspector E. Testa, Senior Health Physicist (Sections 20S1 and 20S2) S. Vias, Senior Reactor Inspector (Section 1R08) B. Crowley, Senior Reactor Inspector (Section 1R08) M. Scott, Senior Reactor Inspector (Sections 1R02 and 1R17) R. Gibbs, Senior Reactor Inspector (Sections 1R02 and 1R17) R. Chou, Reactor Inspector (Section 1R02 and 1R17) W. Sartor, Senior Emergency Preparedness Inspector (Sections 1EP2, 1EP3, 1EP4, 1EP5, and 4OA1)
Approved by:	B. Bonser, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Shearon Harris Nuclear Power Plant, Unit 1
NRC Inspection Report 50-400/00-02

The report covers a 13-week period of resident inspection and announced inspections by a regional senior health physicist, four regional senior reactor inspectors, a regional reactor inspector, and a regional senior emergency preparedness inspector.

The significance of issues is indicated by their color (green, white, yellow, red), and was determined by the Significance Determination Process in Inspection Manual Chapter 0609 (see Attachment).

Cornerstone: Barrier Integrity

- Green. A non-cited violation was issued for failure to establish an adequate procedure for satisfying Technical Specification (TS) surveillance requirement 4.7.6, Control Room Emergency Filtration System (CREFS) in that the procedure used for that purpose included actions which rendered both trains of the CREFS inoperable, a condition not allowed by the TS. The safety significance was low because the CREFS cannot initiate a reactor transient and is not used to mitigate core damage, and because, although the CREFS performs a barrier function by protecting the control room staff from the effects of a release of radioactive materials, the subject procedure rendered the CREFS inoperable for only a few minutes every 18 months (Section 1R22).

Report Details

The plant operated at 100 percent power until the refueling outage which started on April 15 and ended when the unit returned to 100 percent power on May 12. On June 15, power was reduced to approximately 50 percent, to enable repair of a leaking oil seal on a condensate booster pump motor. During the subsequent return to full power, with the unit at approximately 70 percent power, the licensee noted a problem in the condensate booster pump control circuit, and reduced power to approximately 54 percent to enable work on that circuit. Power was returned to 100 percent during the morning of June 21. The unit was manually tripped during the late afternoon of June 21 due to a failed main feedwater isolation valve. The unit was returned to 100 percent power on June 24, and remained at 100 percent power through the remainder of the inspection period.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R02 Evaluation of Changes, Tests, or Experiments

a. Inspection Scope

The inspectors evaluated the licensee's effectiveness in implementing changes to the plant and plant documents as described in the Final Safety Analysis Report (FSAR). The inspectors verified that these changes were made in accordance with 10 CFR 50.59 and the licensee's implementing procedures. During the inspection the inspectors reviewed nine modifications to the plant, and fourteen changes to the plant or plant procedures or tests that did not require a complete 10 CFR 50.59 review in three cornerstone areas.

The inspectors reviewed complete 10 CFR 50.59 reviews associated with the following Engineering Service Requests (ESRs):

ESR Number	Title
96-00025	"Evaluating Results of EPT-441/Modify [Emergency Service Water] Pumps"
97-00233	"Main Feedwater Isolation Valves Design Change"
97-00680	"[Heating, Ventilation & Air-Conditioning] Bag Filter Replacement"
98-00121	"[Motor Operated Valve] - Modification to 1RC-113, 1RC-115, and 1RC-117"
98-00411	"Pressurizer Heater Backup Control Switches A&B"
98-00417	"Temporary Leak Control On [Emergency Service Water] Supply Line to A-[Charging-Safety Injection Pump] Coolers"
98-00482	"[Water Chiller]-2 Chiller [Service Water] Condenser Isolation [Alternate Control Panel] Transfers"
99-00008	"RH-25, RH-63 and SI-359 [Motor Operated Valves]"

The inspectors also reviewed Safety Evaluation (SE) 98-269, which was a complete 10 CFR 50.59 review for the FSAR change request associated with Condition Report 98-00637, “Service Water Flooding Scenario.”

For the following ESRs, the inspectors reviewed the licensee’s determinations that these changes did not require a complete 10 CFR 50.59 review:

ESR Number	Title
96-00522	“Hydraulic Relief Valve Replacement”
97-00416	“6.9 [Kilovolt] [Undervoltage] Protection”
97-00667	“Replace [Nuclear Instrumentation] Power Range N43N44 Detectors”
98-00422	“Evaluate OST-1088, Test Results of Check Valve Testing, Low Head Safety Injection and [Residual Heat Removal] System”
98-00454	“1CS-480 and 1CS-492 Air Set Pressures”
98-00494	“Evaluation To Achieve Additional Motor Torque for [Power Operated Relief Valve] Block”
99-00009	“[Refueling Outage] - 9 [Motor Operated Valve] Modifications for [High-Head Safety Injection], Containment Spray, and [Chemical & Volume Control System]”
99-00031	“[Steam Generator] [Power-Operated Relief Valve] Replacement Valve Seats and Plugs”
99-00088	“Repair of [Reactor Vessel] Head [Control Rod Drive Mechanism] Penetration Canopy Seal Welds”
99-00175	“Main Transformer [Molded Case Circuit Breaker) Replacements”
99-00177	“Lead Shielding Required for Material Upgrade [Reactor Auxiliary Building] 216"
99-00220	“[Reactor Vessel Level Indication System] Train “B” Plasma Display Position Indicator Exercise Monthly Interval Modes 1-3"
99-00262	“Turbine Drive [Auxiliary Feedwater Pump] Oil Seal Evaluation”
99-00430	“[Safety Injection] Thermal Stratification Thermocouple Replacement”

The inspectors also reviewed the licensee’s determinations that the following procedure changes did not require a complete 10 CFR 50.59 review:

SE Number	Description
99-0162	Revision 8 to Operations surveillance test procedure OST-1005, “Control Rod and Rod Position Indicator Exercise Monthly Interval Modes 1-3”
99-326	Revision 6 to maintenance procedure CM-M0210,” [Borg Warner] 16 inch Tilting Disc Check Valve Repair”

The inspectors reviewed the following self-assessment, audit, and/or monthly reports:

- Corrective Action Program database historical review for the last two years (where related corrective action program documents were located by searching on the text “50.59," and the words “safety evaluation”);
- Maintenance Rule Monthly Report, March, 2000;
- Independent Safety Review - Trend Report for the Period June 30 to December 1999, dated March 16, 2000;
- Independent Safety Review - Trend Report for the Period October 1, 1998, through June 30, 1999;
- Licensing 10 CFR 50.59 Program Self-Assessment 98-004, dated December 31, 1998;
- Licensing 10 CFR 50.59 Program Self-Assessment 99-001, dated July 12, 1999; and
- Nuclear Assessment Section Audit Harris Engineering Support Section Assessment, dated June 4, 1999.

b. Issues and Findings

There were no findings identified.

1R04 Equipment Alignment

a. Inspection Scope

For the systems identified below, the inspectors reviewed plant documents to determine correct system lineup, and observed equipment to verify that the system was correctly aligned:

- Motor-driven auxiliary feedwater (AFW) pumps, while the turbine driven auxiliary feedwater (TDAFW) pump was out of service for over-speed trip testing in accordance with procedure EPT-138, “Auxiliary Feedwater Pump 1X-SAB Turbine Mechanical Overspeed Trip Test,” Revision 10.
- “A” emergency diesel generator, while the “B” diesel generator was out of service for preventive maintenance.

For the Class 1E uninterruptible Alternating Current (AC) power, 6.9 kilovolt AC and 480 volt systems, the inspectors reviewed various documents to determine the correct system lineup, including plant procedures, drawings, and the updated FSAR. In addition, the inspectors reviewed outstanding maintenance work requests (WRs) on the systems, and performed a walkdown to identify any discrepancies between the existing system equipment lineup and the correct lineup. The inspectors also reviewed related Action Requests (ARs), to verify that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact mitigating system availability.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed current ARs, work orders, and impairments associated with the fire suppression system. The inspectors reviewed the status of ongoing surveillance activities to determine whether they were current to support the operability of the fire protection system. The inspectors observed surveillance test FPT-3428, "Fire Damper Inspection 18 Month Interval RAB 190, 216, 305 and 332 Elevation," Revision 8, for control room envelope fire dampers CZFDAS 29 and 30, and reviewed test results for the other dampers tested. In addition, the inspectors observed the fire protection detection and suppression equipment in the following areas to determine whether any conditions or deficiencies existed which would impair the operability of the equipment in those areas:

- containment building (during the refueling outage),
- main control room,
- "A" & "B" electrical switchgear rooms, and
- "A" & "B" chiller areas,

b. Issues and Findings

There were no findings identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the results for the "A" train component cooling water heat exchanger inspection conducted in accordance with Engineering Periodic Test Procedure EPT - 163, "Generic Letter 89-13 Inspections," Revision 9. The inspectors also independently observed the heat exchanger condition from the tube side, where service water flows. The inspectors reviewed the test and test results to determine whether test acceptance criteria and inspection results appropriately considered the difference between testing conditions and design conditions, and whether inspection frequencies were adequate to detect degradation prior to loss of heat removal capability below design-basis values.

b. Issues and Findings

There were no findings identified.

1R08 Inservice Inspection Activities

a. Inspection Scope

The inspectors observed: 1) manual ultrasonic (UT) examination of three welds in the safety injection system and a sample of reactor vessel studs; 2) a sample of flow-accelerated-corrosion inspection activities including gridding and thickness measurements; 3) liquid penetrant (PT) examinations on four welds in the safety injection system and on two welds in the main steam system; 4) radiographs for four auxiliary feedwater system welds and three letdown orifices in the chemical and volume control system; 5) magnetic particle (MT) examinations on main steam system welds and liquid magnetic particle on a sample of reactor vessel studs and nuts; and 6) visual inspection (VT) of the containment steel liner boundary. In addition, eddy current acquisition and resolution activities were observed for the steam generators.

The inspectors also reviewed inservice inspection documentation for Class 2 pressure retaining piping, and qualification and certification documentation for examiners, equipment and consumables used for the above examinations. In addition, a sample of issues in the licensee's corrective action program were reviewed for status and resolution. Also, the inspectors reviewed repair and replacement packages for repairs on a feedwater elbow flow accelerated corrosion component and a replacement of AFW piping and hangers.

Observations were performed to determine whether the inservice inspection, repair, and replacement of Class 1, 2, & 3 pressure retaining components were performed in accordance with Technical Specifications (TS) and the American Society of Mechanical Engineers (ASME) Code, Section XI 1989 Edition, no addenda.

b. Issues and Findings

There were no findings identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors reviewed the June 15 licensed operator requalification simulator examinations for the “C” main control room operating crew, and discussed the associated comments with the licensee’s training staff.

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

For the equipment issues described in the ARs and WRs listed below, the inspectors reviewed the licensee’s implementation of the Maintenance Rule (10 CFR 50.65) with respect to the characterization of failures, the appropriateness of the associated a(1) or a(2) classification, and the appropriateness of either the associated a(2) performance criteria or the associated a(1) goals and corrective actions:

AR or WR Number	Title/Description.
WR 00-AALX1	Ground on 125V DC bus
WR 99-AJCY1	Isolation damper 1CZ-4 (a damper in the control room heating, ventilation, and air conditioning system) failed to close on shutdown of the E-9 exhaust fan
AR 00017101	[Emergency Response Facilities Information System] functional failure
AR 0018403	AH-7A (an air handler in the reactor auxiliary building heating, ventilation, and air conditioning system) failed to start
AR 0018577	Functional failure of printed circuit cards associated with 1PIC-01-0223 (a summing amplifier card in the nuclear steam supply system process instrumentation and control system)
AR 0018898	1SW-233 (a containment-isolation valve in the service water system) did not meet the acceptance criteria for a local leak-rate test

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's procedures for scheduling and managing plant risk, and records of related activities developed during the two weeks immediately preceding the refueling outage, to verify that the licensee had effectively scheduled and managed plant risk during that period. The inspectors also reviewed calculation HNP-F/PSA-0010, "Risk Assessment of Air Compressor Modification," Revision 1, to verify that the licensee adequately assessed the risks associated with replacing several air compressors in the plant while the plant was operating at full power. In addition, the inspectors reviewed the licensee's assessment of the risks associated with returning the unit to service following the June 13 reactor trip.

b. Issues and Findings

The inspectors observed that during the TDAFW pump overspeed trip testing accomplished during the week prior to the refueling outage, the licensee breached a through-wall fire penetration in the reactor auxiliary building, to allow temporary power cables for the outage to be run through the building wall. (That wall was a fire barrier with a three-hour rating.) The licensee compensated for the breach by assigning a roving fire watch to the building.

The inspectors observed that the breached penetration was within 10 feet of the nearest motor-driven auxiliary feedwater pump (MDAFW) flow control valve, and that with the TDAFW pump out of service, the MDAFW pump flow path constituted the only path available for delivering AFW to the steam generators. During the same period, the inspectors also observed that pre-outage fire barrier breaches existed between the "A" and "B" switchgear rooms which contain the breakers for the motor-driven AFW pumps (also compensated for by an hourly fire watch).

The inspectors found that the although the licensee's risk assessment had assessed the impact on plant risk of removing the TDAFW pump from service, the licensee's assessment had not considered the impact on plant risk of breaching fire penetrations in relatively close proximity to key components associated with the remaining AFW mitigating capability. Consequently, the licensee's assignment of a roving fire watch to compensate for breached fire penetrations had not been based on the relative risk significance of those penetrations.

After the inspectors discussed this observation with the licensee, the licensee changed the fire watch from roving to continuous, while the TDAFW pump was out of service. In addition, the licensee initiated AR 18176 to assess how fire risk should be addressed with respect to equipment out of service, and how related compensatory measures should be assigned.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events

a. Inspection Scope

The inspectors reviewed the operating crew's performance during the following nonroutine plant evolutions:

- during plant shutdown for the refueling outage, shutting the plant down and placing the residual heat removal (RHR) system in service for forced cooldown;
- near the end of the refueling outage, starting up the reactor and synchronizing the unit to the grid to place the unit back in service;
- on June 16, reducing reactor power to 50% to repair the condensate booster pumps;
- on June 17, increasing reactor power to 100%; and
- on June 21, the reactor startup and synchronizing the unit to the grid to place the unit back in service, following the June 20 reactor trip.

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

For the operability evaluations described in the ESRs listed below, the inspectors evaluated the technical adequacy of the evaluations, to ensure that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred:

ESR No.	Rev. No.	Title
00-00121	0&1	"Operability Evaluation for 1FW-277"
00-00139	0	"Pressurizer Structural Integrity Eval-Exceeded Heatup Limit RFO9"
00-00186	0	"Operability Determination for "B" [Charging/Safety Injection Pump] Low Flow Operation"
00-00188	0	"1SI-3 & 1SI-4 Troubleshooting Due to Breaker Trip"

00-00190	0	"Chiller Operation Following [Safety Injection] Initiation"
00-00242	0	"Lube Oil Emitted While Air Rolling A-EDG"

b. Issues and Findings

There were no findings identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed an operator workaround associated with venting of the pressurizer relief tank to determine whether the functional capability of the related system or human reliability in responding to an initiating event was affected. The inspectors specifically considered whether the workaround affected the operators' ability to implement abnormal or emergency operating procedures. In addition, the inspectors reviewed the cumulative effect of the operator workarounds on abnormal or emergency operating procedures.

b. Issues and Findings

There were no findings identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors evaluated 21 modifications in three cornerstone areas, to verify that the modified systems' designs had not been degraded, and that the modifications had not left the plant in an unsafe condition. Related corrective action and audit outputs were examined for content and effectiveness.

The inspectors reviewed the following ESRs:

ESR Number	Title
96-00025	"Evaluating Results of EPT-441/Modify [Emergency Service Water] Pumps"
96-00522	"Hydraulic Relief Valve Replacement"
97-00233	"Main Feedwater Isolation Valves Design Change"
97-00416	"6.9 [Kilovolt] [Undervoltage] Protection"
97-00667	"Replace [Nuclear Instrumentation] Power Range N43 and N44 Detectors"
97-00680	"[Heating, Ventilation and Air-Conditioning] Bag Filter Replacement"

98-00121	“[Motor Operated Valve] - Modification to 1RC-113, 1RC-115, and 1RC-117"
98-00411	“Pressurizer Heater Backup Control Switches A&B”
98-00417	“Temporary Leak Control on [Emergency Service Water] Supply Line To A-[Charging/Safety Injection Pump] Coolers”
98-00422	“Evaluate OST-1088, Test Results of Check Valve Testing, Low Head Safety Injection and [Residual Heat Removal] System”
98-00454	“1CS-480 and 1CS-492 Air Set Pressures”
98-00482	“WC-2 Chiller SW Condenser Isolation ACP Transfers”
98-00494	“Evaluation to Achieve Additional Motor Torque for [Power Operated Relief Valve] Block”
99-00008	“RH-25, RH-63 and SI-359 [Motor Operated Valve]”
99-00009	“[Refueling Outage] - 9 [Motor Operated Valve] Modifications for [High Head Safety Injection], Containment Spray, and [Chemical and Volume Control System]”
99-00031	“[Steam Generator] [Power Operated Relief Valve] Replacement Valve Seats and Plugs”
99-00088	“Repair of [Reactor Vessel] Head [Control Rod Drive Mechanism] Penetration Canopy Seal Welds”
99-00175	“Main Transformer [Molded Case Circuit Breaker] Replacements”
99-00177	“Lead Shielding Required for Material Upgrade [Reactor Auxiliary Building] 216"
99-00220	“[Reactor Vessel Level Indication System] Train “B” Plasma Display Position Indicator Exercise Monthly Interval Modes 1-3"
99-00262	“Turbine Drive [Auxiliary Feedwater Pump] Oil Seal Evaluation”
99-00430	“[Safety Injection] Thermal Stratification Thermocouple Replacement”

b. Issues and Findings

There were no findings identified .

1R19 Post Maintenance Testing

a. Inspection Scope

For the post-maintenance tests listed below, the inspectors reviewed the test procedure and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed and demonstrated that the affected equipment was functional and operable:

Test Procedure		
Number	Title	Related maintenance task
MST-I0073	“Train B 18 Month Manual Reactor Trip, Solid State Protection System Actuation Logic and Master Relay Test,” Revision 17	Various preventive-maintenance tasks
OST–1046	“Main Steam Isolation Valve Operability Test Quarterly Interval,” Revision 7	Various outage maintenance tasks
OST-1809	“Switchover to Recirculation Sumps: ESF Response Time,” Revision 10	Preventive maintenance on various valves
OST-1826	“Safety Injection: [Engineered Safeguards Features] Response Time, Train B 18 Month Interval on a Staggered Test Basis Mode 5 - 6," Revision 14	Various outage maintenance tasks
OST-1080	“Auxiliary Feedwater Pump 1X-SAB Full Flow Test Quarterly Interval Mode 1, 3,” Revision 11	Preventive maintenance on various valves
OST-1853	“Feedwater Isolation [Engineered Safeguards Features] Response Time Trains A and B, 18 Month Interval Modes 5 - 6," Revision 6	Post-modification test for feedwater isolation valve actuator replacement
OST-1104	“Containment Isolation Inservice Inspection Valve Test Quarterly Interval Modes 1-6," Revision 16	In the control circuit for the actuator on a main steam isolation valve bypass valve, calibration of a device which converts an electrical current signal into a pneumatic pressure signal

b. Issues and Findings

There were findings identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

Refueling Outage 9 (RFO9) started on April 15 and ended May 12. The following is a description of the scope of inspections performed for refueling and outage-related activities:

- Prior to the outage, to verify that the licensee had appropriately considered risk,

industry experience, and previous site-specific problems, the inspectors reviewed the licensee's outage risk control plan as implemented through procedure OMP-003, "Outage Shutdown Risk Management," Revision 10. The inspectors verified that the licensee prepared a Key Safety Function Availability Checklist (Attachment 1 to OMP-003) for each plant configuration defined in the plan, and that each checklist defined how the key safety functions were provided and identified the systems/system trains that provided those functions, while the unit was in the corresponding configuration. The inspectors also confirmed through review of various plant operating manual procedures that the licensee had developed mitigation/response strategies for losses of the following key safety functions:

- Decay Heat Removal
- Electrical Power Distribution
- Inventory Control
- Reactivity Control
- Pressure Control
- Containment

- During the outage, the inspectors verified at various times that the configuration-specific Key Safety Function Availability Checklist was posted at conspicuous spots throughout the plant, including the main control room. The inspectors routinely confirmed that the licensee followed the outage risk control plan and maintained operable the systems that provided the key safety functions.

- The inspectors observed portions of and reviewed data for the cooldown to Mode 5 (<200 F) to verify that TS cooldown restrictions were followed.

- The inspectors reviewed the following procedures and documents against the licensee's commitments related to NRC Generic Letter 88-17 ("Loss of Decay Heat Removal"), to confirm that those commitments were still in place and adequate:

  - AOP-020, "Loss of [Reactor Coolant System] Inventory or Residual Heat Removal While Shutdown," Revision 19;

  - AP-013, "Plant Nuclear Safety Committee," Revision 22;

  - ESR 9500808, "Removable Equipment Hatch Cover Bolting Requirements," Revision 0;

  - ESR 9800297, "Containment Closure Procedure," Revision 0;

  - GP-008, "Draining the Reactor Coolant System," Revision 16;

  - HNP-C/CONT-1009, "Containment Building Removable Equipment Hatch," Revision 0;

  - OMP-003, "Outage Shutdown Risk Management," Revision 11;

  - OMP-004, "Control of Plant Activities During Reduced Inventory Conditions,"

Revision 8;

- OST-1034, “Containment Penetrations Test Weekly Interval During Core Alterations and Movement of Irradiated Fuel Inside Containment,” Revision 10; and

- OST-1091, “Containment Closure Test Weekly Interval During Core Alterations and Movement of Irradiated Fuel Inside Containment,” Revision 10.

During mid-loop operations, the inspectors periodically verified that the configurations of plant systems were in accordance with the subject commitments, and observed control-room activities to verify that unexpected conditions or emergent activities did not affect the operators’ ability to maintain required reactor vessel level.

- The inspectors reviewed fuel handling operations to verify that those operations and related activities were being performed in accordance with TS and procedures FHP-020, “Refueling Operations,” Revision 20, and FHP-014, “Fuel and Insert Shuffle Sequence,” Revision 16. The inspectors specifically verified the licensee’s movement of fuel assemblies HL40, HL23, HL04, HL42, and HL39, from core offload through core reload, to verify that the licensee accurately tracked the location of those fuel assemblies.

- For changes in the unit’s operational mode, the inspectors verified on a sampling basis that TS requirements and prerequisites from procedures GP-002, “Normal Plant Heatup from Cold Solid to Hot Subcritical, Mode 5 to Mode 3,” Revision 21; GP-004, “Reactor Startup, Mode 3 to Mode 2,” Revision 25; and GP-005, “Power Operation, Mode 2 to Mode 1,” Revision 27, were met prior to the mode changes. Prior to reactor startup, the inspectors examined the spaces inside the containment building to verify that debris had not been left which could affect performance of the containment sumps, and that performance of procedure OST-1081, “Containment Visual Inspection When Containment Integrity Is Required,” Revision 8, was adequate. Following reactor physics testing completed in accordance with procedure PLP-626, “Power Ascension Program After a Refueling Outage,” Revision 16, the inspectors reviewed the test results to verify that core operating limit parameters were consistent with the design.

- The inspectors reviewed various problems that arose during the outage, to verify that the licensee was identifying problems related to refueling outage activities at an appropriate threshold and entering them in the corrective action program. The inspectors specifically reviewed the ARs listed below, because these were initiated during the refueling outage and were considered significant:

AR Number	Title
19038	“Loss of Level in Spent Fuel Pools”
18884	“Fuel Transfer Cart Emergency Pull Cable Failure”
18677	“Void in [Residual Heat Removal] System”

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing

.1 Test Observation

a. Inspection Scope

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

Number	Rev.	Title
OST-1813	18	"Remote Shutdown System Operability 18 Month Interval"
OST-1815	0	"Remote Shutdown: Test of Interposing MDR Relays Primary and Backup Fuses 18 Month Interval Modes 1-6 or Defueled"
MST-E0027	8	"1E Battery Cell Connection Resistance and Service Test"
OST-1106*	14	"[Chemical & Volume Control System]/[Safety Injection] System Operability Quarterly Interval Mode 4-5-6"
OST-1823	15	"1A-SA Emergency Diesel Generator Operability Test 18 Month Interval"
OST-1071	9	"[Residual Heat Removal] Hot Leg Suction Valve Interlock Test 18 Month Interval Modes 5-6"
OST-1831	7	"Turbine Driven Auxiliary Feedwater Pump Auto Start: [Engineered Safeguards Features] Response Time Train B 18 Month Interval Mode 3-4"
OST-1046	7	"Main Steam Isolation Valve Operability Test Quarterly Interval Mode 3 to 5"

* Inservice test

b. Issues and Findings

There were no findings identified.

.2 (Closed) Licensee Event Report (LER) 50-400/2000-001-00, Control room emergency filtration system TS violation. This LER documents that on February 22, 2000, the licensee removed an access panel on ductwork associated with the Control Room Emergency Filtration System (CREFS) for approximately five minutes, to facilitate surveillance testing of the charcoal in the system's filtration unit. Because the subject access panel is located on ductwork that is common to both of the redundant CREFS trains, removal of the panel rendered both trains inoperable, in that with the panel

removed, the CREFS would not be able to achieve and maintain a positive pressure in the control room, as required by TS surveillance requirement 4.7.6.d.3. Thus, while the panel was removed, the unit was operating with both CREFS trains inoperable. This LER was submitted because that condition is not allowed by TS.

The licensee's investigation into this incident found that:

- The cause of the incident was inadequate review of plant procedures which affect control room ventilation boundaries.

- This incident was similar to the incidents described in LER 50-400/1999-08-00. That LER documented that on multiple occasions, both control room doors had been blocked open, rendering both trains of CREFS inoperable. (LER 50-400/1999-08-00 is discussed in NRC Inspection Report 50-400/2000-01.)

The inspectors reviewed the circumstances associated with LER 50-400/2000-001, and found that:

- The incident described in the LER was the most recent in a series of incidents in which the CREFS access panel had been opened to facilitate surveillance testing.

- The subject surveillance testing had been conducted in accordance with licensee procedure EST-400, "Engineered Safety Feature Air Filtration Testing," Revision 10. That test has an 18-month frequency, and has been conducted at that frequency since initial plant licensing.

- The method used in EST-400 to test the CREFS exhaust fans included opening the duct access panel twice. First, early in the test, the duct access panel was removed and a test panel (with attached instrumentation) was inserted into the opening. (Inserting the test panel effectively closed the access panel opening.) Next, late in the test, the test panel was removed and the duct access panel was closed. Thus, during each test, the CREFS was rendered inoperable twice: once after the access panel was removed and before the test panel was installed, and again when the test panel was removed and before the access panel was re-installed. However, each time the CREFS was rendered inoperable, the period of inoperability extended only as long as was required to complete the associated evolution of removing the access

panel and installing the test panel, or vice versa. From discussions with the responsible test engineer, the inspectors determined that each of these evolutions was typically completed in only a few minutes. Thus, the inspectors considered that each time EST-400 was completed, the CREFS was rendered inoperable for only a few minutes.

- As described in this LER, the licensee's corrective actions included reviewing and revising as necessary the procedures which affect the boundaries of the CREFS system, to ensure that none render the CREFS inoperable. Additional corrective actions include placing permanent signs on the duct access panels to direct personnel to contact the main control room before removing a panel.

- Inadequate TS surveillance test procedures (numerous examples) were the subject of enforcement action EA 97-370 in NRC Inspection Report 50-400/97-08. In addition, multiple examples of inadequate surveillance procedures were the subject of a non-cited violation in NRC Inspection Report 50-400/99-02.

- The incident described in the LER was found by the licensee while performing corrective action for LER 50-400/1999-08-00, which was also associated with TS 3.0.3 entries during surveillance testing.

The inspectors noted that the circumstances associated with this LER include multiple incidents in which the performance of EST-400 rendered both trains of the CREFS inoperable, thereby placing the unit in a condition not allowed by TS, for relatively short periods of time. The inspectors considered that the cause of these incidents was an inadequacy in EST-400, in that the instructions in that procedure were not consistent with the TS.

Technical Specification 6.8.1.a and Regulatory Guide 1.33 require that written procedures shall be established, implemented, and maintained for surveillance tests listed in the TS. The licensee failed to establish an adequate written procedure for the surveillance test listed in TS 4.7.6, in that performance of EST-400 rendered both trains of the CREFS inoperable, thereby placing the unit in a condition not allowed by TS. The inspectors therefore considered the inadequacy in EST-400 to be a violation of TS 6.8.1.a. This violation was associated with an inspection finding that was characterized by the Significance Determination Process as having very low risk significance (green), and is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as AR 16858. This violation has been designated NCV 50-400/00-02-01, Inadequate CREFS surveillance test procedure.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed ESR 00-0022, "Temporary Air Compressors to Support ESR 99-00145," Revisions 0, 1, & 2, which described a temporary modification to install temporary air compressors to provide air to the unit's service air and instrument air systems, while permanent air compressors were being replaced under another ESR.

The inspectors reviewed the subject ESR against the service air and instrument air system design bases documentation, to verify that the modification had not affected system operability/availability, and that the modification had not increased the likelihood of a loss of instrument air. The inspectors also reviewed the installation of the temporary modification, to verify that the installed configuration was consistent with the modification documents, and affected drawings and operating and maintenance procedures, to verify that those documents had been properly updated.

b. Issues and Findings

There were no findings identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing

a. Inspection Scope

The inspectors evaluated the alert and notification system design and testing program. The testing program was reviewed to determine that sirens were meeting availability requirements and that corrective action for siren problem was timely.

b. Observations and Findings

There were no findings identified.

1EP3 Emergency Response Organization Augmentation

a. Inspection Scope

The inspectors reviewed the design of the emergency response organization augmentation system and the maintenance of the licensee's capability to staff emergency response facilities within stated timeliness goals.

b. Observations and Findings

There were no findings identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspectors reviewed changes to the Emergency Plan and the emergency action levels to determine whether any of the changes decreased the effectiveness of the Emergency Plan. The current Shearon Harris Nuclear Power Plant Emergency Plan was Revision 37. The review was performed against 10CFR 50.54(q).

b. Observations and Findings

There were no findings identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspectors evaluated the efficacy of licensee programs that addressed weaknesses and deficiencies in emergency preparedness. Items reviewed included exercise and drill critique reports and the licensee's Drill & Exercise Corrective Action Status Report. The actual Notification of Unusual Event emergency plan activation on April 2, 2000, was reviewed.

b. Issues and Findings

There were no findings identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency response training drill conducted on June 13 to verify licensee self-assessment of classification, notification, and protective-action-recommendation development.

b. Issues and Findings

There were no findings identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

The inspectors:

- performed plant walkdowns of radiation control areas,
- reviewed selected radiation work permits,
- evaluated worker knowledge of radiation work practices,
- observed package labels, postings and control of access to radiation control areas, high radiation areas and very high radiation areas, and
- performed independent boundary and contamination control surveys.

Selected survey instruments, electronic pocket dosimeters, friskers, small-article monitors and portal monitor calibrations, source checks and operability were independently verified. The inspectors verified the Certificate of Accreditation by the National Voluntary Laboratory Accreditation Program for the Thermoluminescent Dosimeters and the Electronic Dosimeters. The inspectors attended audit debriefs by Performance Evaluation Support (Assessment 00-07-SP-C) of the Dosimetry Unit of Environmental Services, and Nuclear Assessment Section debrief for the Environmental and Radiation Control functional area (Assessment RR-ERC-00-01). Radiation control area exit whole-body frisker training for technicians and hands-on field training were observed. Meteorological tower commitments in the FSAR were reviewed. Selected health physics identified items in the licensee's problem investigation process were reviewed for assignment, closeout timeliness and trending.

b. Issues and Findings

There were no findings identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspectors reviewed the recent plant refueling outage (RF09) collective exposure, shutdown chemistry crud bursts, and clean-up results. The inspectors reviewed ALARA work plan dose estimates and dose controls used to track and minimize worker doses for the following outage activities:

- reactor vessel stud removal;

- reactor coolant pump “A” seal change-out;
- reactor coolant pump motor “A” change-out;
- steam generator eddy current, in-situ pressure testing, and tube plugging;
- install/remove nozzle dams;
- steam generator platform set-up;
- temporary power and lighting; and
- steam generator man-way, erection and removal of scaffolds and insert removal and installation.

The inspectors reviewed the ALARA emergent work planning, work controls and worker dose for the underwater repair of the transfer cart and refueling activities. The inspectors observed workers performing the maintenance activities and the use of shielding packages and engineering controls. The inspectors independently verified dose rates, area surveys at selected locations and verified postings.

b. Issues and Findings

There were findings identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

Emergency Preparedness Cornerstone

.1 Emergency Response Organization (ERO) Drill/Exercise Performance

a. Inspection Scope

On June 28, 2000, the inspector assessed the accuracy of the performance indicator (PI) for ERO drill and exercise performance (DEP) through review of documentation from actual emergency plan implementation events, evaluated exercise scenarios, and drill and training evoluation scenarios for the time period of first quarter 1999 through first quarter 2000 (1Q99-1Q00). In addition, the inspectors reviewed and discussed the licensee’s methodology for calculating the DEP PI.

b. Issues and Findings

There were no findings identified.

.2 ERO Drill Participation

a. Inspection Scope

On June 28, 2000, the inspector assessed the accuracy of the PI for ERO drill participation through review of drill attendance records for selected individuals in key ERO positions for the time period of 1Q99-1Q00.

b. Issues and Findings

There were no findings identified.

.3 Alert and Notification System Reliability

a. Inspection Scope

On June 29, 2000, the inspectors assessed the accuracy of the PI for alert and notification system (ANS) reliability through review of the licensee's records of the annual full-cycle test and the results of the growl and silent tests conducted quarterly and biweekly respectively for the time period of 1Q99-1Q00.

b. Issues and Findings

There were no findings identified.

4OA3 Event Follow-up

a. Inspection Scope

The inspectors reviewed the circumstances associated with the following events:

- A notification of Unusual Event on April 2. The declaration was made due to the plant process computer being unavailable for greater than 4 hours.

- A safety injection event that occurred on May 4 with the unit shutdown in Mode 5 for a refueling outage. The event occurred while concurrently performing surveillance testing of pressurizer pressure channel 1 and de-energizing the SIII instrument bus for a maintenance activity.

- The June 20 manual reactor trip from 100 percent power. The manual reactor trip was required because of a lowering steam generator level in the "A" steam generator due to the unexpected closure of the associated main feedwater isolation valve(1FW-159).

b. Issues and Findings

There were no findings identified.

4OA5 Other

.1 Draindown During Shutdown and Common-Mode Failure (NRC Generic Letter 98-02)

a. Inspection Scope

Using Temporary Instruction 2515/142, "Draindown During Shutdown and Common-Mode Failure (NRC Generic Letter 98-02)," the inspectors reviewed licensee procedures and records to confirm that the licensee (1) had searched for potential draindown paths that could be created by operator error or equipment failures, and which could lead to a common-cause failure of residual heat removal and emergency core cooling system pumps, and (2) had taken adequate measures to reduce the likelihood of such a draindown.

b. Issues and Findings

The inspectors found that the licensee had determined that the plant was susceptible to the problem identified in the Generic Letter, and that the licensee had in fact searched for potential draindown paths, and had taken adequate measures to reduce the likelihood of such a draindown. Therefore, there were no findings identified through this inspection.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Duncan, Plant General Manager, and other members of licensee management at the conclusion of the inspection on July 7, 2000. 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, Regulatory Affairs Manager
B. Altman, Major Projects Manager
C. Burton, Site Operations Director
R. Duncan, Harris Plant General Manager
J. Eads, Emergency Preparedness Supervisor
R. Field, Nuclear Assessment Manager
T. Hobbs, Operations Manager
J. Holt, Outage and Scheduling Manager
G. Kline, Harris Engineering Support Services Manager
T. Natale, Training Manager
K. Neushaeffer, Plant Support Services Manager
J. Scarola, Harris Plant Vice President
B. Waldrep, Maintenance Manager
E. Wills, Environmental & Radiation Control Manager

NRC

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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

50-400/00-02-01	NCV	Inadequate CREFS surveillance test procedure (Section 1R22)

Previous Items Closed

50-400/2000-001-00	LER	Control room emergency filtration system Technical Specification violation (Section 1R22)

Previous Items Discussed

None

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Attachment