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

Report No.: 50-400/93-08

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: March 20 - April 16, 1993

Inspectors: _____ 5/5/93
J. Tedrow, Senior Resident Inspector Date Signed

_____ 5/5/93
D. Roberts, Resident Inspector Date Signed

Approved by: _____ 5/5/93
H. Christensen, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine inspection was conducted by the resident inspectors in the areas of plant operations, radiological controls, security, surveillance observation, maintenance observation, design changes and modifications, fire protection/prevention, essential services chilled water system reliability, licensee event reports, 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 violation and one deviation were identified: Failure to properly implement inservice testing for components with data in the alert range, paragraph 2.c.(1); Performance of non-emergency safety-related maintenance without appropriate preplanning, paragraph 4.a.

A licensee identified non-cited violation was identified regarding the failure to maintain apropriate actuation setpoints for the containment vacuum relief system, paragraph 2.c.(2).

Maintenance activities to identify and correct deficiencies with air handler AH-92A were considered to be poor, paragraph 4.b.

Engineering support and contingency planning for a potentially inoperable emergency battery cell were considered to be weak, paragraph 4.d.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Cribb, Manager, Quality Control
*C. Gibson, Manager, Programs and Procedures
*M. Hamby, Manager, Regulatory Compliance
*D. McCarthy, Manager, Regulatory Affairs
*T. Morton, Manager, Maintenance
*J. Nevill, Manager, Technical Support
*W. Robinson, General Manager, Harris Plant
*W. Seyler, Manager, Outages and Modifications
H. Smith, Manager, Radwaste Operation
*D. Tibbitts, Manager, Operations
*G. Vaughn, Vice President, Harris Nuclear Project
*W. Wilson, Manager, Spent Nuclear Fuel
*L. Woods, Manager, Systems Engineering

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; and the technical support center.

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.

(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.

The inspectors found plant housekeeping and material condition of components to be satisfactory. 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 were reviewed to verify the following: TS were complied with, corrective actions and generic items were identified and items were reported as required by 10 CFR 50.73.

(1) ACR 93-126 reported that the "A" spent fuel pool cooling pump (FPC-1A) entered the high alert range for differential pressure during a quarterly surveillance test on June 23, 1992, but the pump had not been placed on an increased testing frequency (ITF) or analyzed as required by Inservice Inspection Program Procedure ISI-203, ASME Section XI Pump and Valve Program Plan. The licensee discovered this error while reviewing the data for a March 12, 1993 quarterly test. Following the licensee's discovery, the pump was immediately placed on an ITF and the licensee reviewed other pump data to determine if any more pumps had been missed. During discussions with the NRC inspector, the licensee indicated that this review yielded no additional examples of oversight and that the above instance appeared to be an isolated case. When the inspector reviewed historical data for all of the pumps in the IST program, 12 instances of missed ITFs or the failure to perform an analysis for pumps that had gone into either the high or low alert ranges for flow, differential pressure, or vibration over the last four years were found. Examples included high alert differential presure data for the "A" containment spray pump in February 1990 and again on FPC-1A in December 1991. The "B" service water booster pump went into low flow alert on three separate occasions (August 1991, March 1992, and September 1992) prior to being placed on ITF in September 1992. The TDAFW pump went into high alert for vibration on six occasions between 1989 and 1992 without any required corrective actions. When the inspector reviewed the files for these pumps with the licensee, it was found that no records of corrective actions existed for the unacceptable test data identified by the inspector. The inspector considered that a lack of a proceduralized review process for IST data, which could potentially fall into the alert range, contributed to this problem. Currently, the ASME Section XI required action range, which defines pump operability, is referenced as acceptance criteria in

Operations Surveillance Test procedures. This provides a formal means of identifying data which falls in the required action range. The inspector verified that none of the required actions were missed and that pump operability was not affected by the missed ITFs. The inspector also verified that the pumps are currently being tested on a frequency commensurate with recent test data.

The test results for the spent fuel pool cooling pump identified by the licensee and the twelve examples found by the inspector were all considered to be in violation of the licensee's inservice testing procedure. Although the licensee identified the first example, this violation is being cited due to the excessive number of examples later identified by the NRC inspector during his followup review.

Violation (400/93-08-01): Failure to properly implement inservice testing for components with data in the alert range.

In addition to the above issue, the inspector identified several borderline cases where surveillance test data fell right on the margin for the acceptable and alert ranges. For pumps, Section XI of the ASME Code defines the acceptable range for flow to be 0.94 to 1.02 of the established baseline flow. However, Section XI also defines the low and high alert ranges as 0.90 to 0.94 and 1.02 to 1.03 of the baseline flow respectively. Hence, the alert range boundaries overlap with the acceptable ranges at its margins and allows data which falls on the border to be interpreted either way. This same ambiguity exists for vibration (0 to 1 mil acceptable and 1 to 1.5 mil high alert) and the other monitored parameters. The inspector found flow data for three successive tests (September 1992, December 1992, and February 1993) performed on the "A" service water booster pump and one (March 1992) for the "A" RHR pump that were on the acceptable and alert range margins. Several instances were found for the TDAFW pump and others where vibration data was exactly 1 mil. Since Section XI was ambiguous in this regard, the licensee had interpreted this borderline data to be acceptable and consequently did not place the pumps on ITF or perform any analysis on the data. Although a number of items in subsection IWP are subject to interpretation and have documented interpretations in the licensee's implementation procedure ISI-203, no such formal interpretation existed for the analysis of data which falls on the margins of the alert ranges. The inspector discussed this matter with the licensee who agreed that there should be a procedural interpretation for qualifying borderline test data.

(2) ACR 93-142 reported that the containment vacuum relief system actuation setpoint was not within the limits established by the TS. Technical Specification 3.6.5 requires the containment vacuum relief system be operable with an actuation setpoint of equal to or less negative than -2.5 INWG differential pressure (containment pressure less atmospheric pressure). During a review of maintenance procedures for a plant modification, licensee personnel discovered that the differential pressure transmitters, used to actuate the system, sense a differential pressure between the containment building and the Reactor Auxiliary Building (RAB). This instrumentation has been maintained by the licensee by the performance of loop calibration procedures for the transmitters with a setpoint of -2.5 INWG with a tolerance of 0.25 INWG. Since the RAB pressure is maintained at a negative pressure relative to outside atmosphere so as to monitor and filter potential airborne radioactive release pathways, the effective actuation setpoint for the vacuum relief system includes the actuation setpoint plus the negative pressure at which the RAB is maintained (-0.2 - -0.4 INWG). This condition exceeded the TS required actuation setpoint.

When informed of this situation on March 31, 1993, operations personnel secured the RAB normal ventilation to equalize the RAB pressure with atmospheric pressure. This was a conservative action until plant engineering could make a determination of system operability. On April 1, 1993, an engineering evaluation concluded that system operability was not affected and that the current configuration was in accordance with plant design. The RAB normal ventilation was subsequently returned to service. On April 2, 1993, the RAB normal ventilation was again secured due to concerns regarding compliance with the exact wording of the TS. The containment vacuum relief valve actuation setpoint was subsequently revised via a temporary modification (PCR-6852) to establish a value of -1.0 INWG which allowed a margin for RAB pressure control.

The inspectors researched the FSAR and licensee calculations which supported operation of the system. Section 6.2.1 .1.3.4 of the FSAR supported the present design of the containment vacuum relief system. Calculation 012, dated May 2, 1986, assumed an initial containment vacuum of -4.0 INWG before actuation of the vacuum relief system. The results of this calculation concluded that the maximum differential pressure between containment and the RAB atmosphere would be less than the design value of 2.0 psi as specified in the FSAR. Since the negative pressure maintained in the RAB in conjunction with the actuation setpoint of -2.5 INWG would not have exceeded the maximum of -4.0 INWG assumed in the calculation, the inspector

concluded that no safety concern existed and that the current plant design was in accordance with the FSAR. However, the licensee was encouraged to correct the wording of the TS to reflect the actual plant design configuration which measures differential pressure between the containment building and the RAB. This violation will not be subject to enforcement action because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B of the Enforcement Policy.

NCV (400/93-08-02): Failure to maintain appropriate actuation setpoints for the containment vacuum relief system.

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:

- OST-1013 1A-SA Emergency Diesel Generator Operability Test Monthly Interval
- OST-1023 Offsite Power Availability Verification Weekly Interval
- OST-1026 Reactor Coolant System Leakage Evaluation Daily Interval
- OST-1085 1A-SA Diesel Generator Operability Test Semi-annually
- EPT-033 Emergency Safeguards Sequencer System Test
- EPT-194T Emergency Diesel Generator 1A-SA Governor Adjustment and Response Testing

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. No violations or deviations were observed.

a. During the initial performance of procedure OST-1085 at 9:07 p.m. on March 20, the "A" emergency diesel generator failed to establish a stable output frequency within the time limit of 10 seconds. Plant operators using a hand held stop watch measured a time of 10.03 seconds for this parameter to stabilize. The diesel was subsequently declared inoperable. A recorder device was installed to measure the time for the diesel generator to achieve rated voltage and frequency. The diesel was started per an operating procedure for a second time at approximately 4:30 a.m. on March 21 with satisfactory frequency stabilization time. At

5:08 a.m. on March 21, the diesel was started a third time in accordance with procedure OST-1085 during which an acceptable frequency stabilization time of 9.36 seconds was obtained. During the two later starts, the time was measured with hand held stop watches and the recorder device. These starts showed that, in some cases, the times measured by stop watch were longer than those measured by the recorder devices by as much as one second. The licensee concluded that a time measuring mistake had been made on the first start attempt and declared the diesel operable.

As mentioned in NRC Inspection Report 50-400/93-07, several previous diesel start times have exceeded the 10 second limit. Licensee personnel discovered that most of the slow starts occurred during the performance of surveillance tests where safety injection slave relays were actuated to produce the diesel start signal as was the case with procedure OST-1085. The licensee believes the diesel starting time is being measured inconsistently during these tests when the slave relays are actuated.

Further investigation for the slow diesel generator start time was performed by the licensee between March 24 and March 26. The fuel control shafts and pump racks were inspected by the equipment vendor representative. No problems were identified. Procedure EPT-194T was then performed on March 26 to adjust the diesel governor response. After adjustments were made to the governor, procedure OST-1013 was performed during which a substantially improved frequency stabilization time of 8.6 seconds was achieved.

b. During a review of the TS associated with surveillance procedure OST-1023, the inspector noticed that TS 4.8.1.1.1.a required that the connecting circuit for the offsite transmission network and the onsite safety-related distribution system be verified operable by checking correct breaker alignment and power availability. Although the procedure adequately checked circuit breaker positions, it did not contain a requirement to verify that switchyard voltage was present. Although power availability is usually obvious, certain outage conditions could make the power availability check important. The inspector recommended that the surveillance procedure be enhanced to include this check.

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 were issued and TS requirements were being followed. Maintenance was observed and work packages were reviewed for the following maintenance activities:

- Troubleshooting/replacement of fan bearings for air handler AH-92A.
- Replacement of AH-92A supply breaker in accordance with procedure CM-E0010, 480 Vac Molded Case Circuit Breaker Test.

- Troubleshoot cause for axial flux difference channel drifting in accordance with procedure MST-I0045, Calibration of Nuclear Instrumentation System Power Range N42.

- Inspection of "A" emergency diesel generator fuel control shafts and pump racks.

- Troubleshoot/repair the TDAFW pump which tripped on mechanical overspeed during surveillance testing.

- Rebuild "B" CSIP using new rotating assembly and mechanical seals in accordance with procedures CM-M0019, Pacific Charging/Safety Injection Pump Size 2 1/2" RL Type IJ Disassembly and Maintenance, CM-M0021, Westinghouse High-Speed Gear Drives Type SU-19 for Charging/Safety Injection Pump, Disassembly and Maintenance, and MPT-M0059, Charging/Safety Injection Pump Nonmetallic Component Replacement and Lubrication (Mechanical Environment Qualification).

- Calibrate pressure differential switch for containment vacuum relief system in accordance with temporary modification PCR-6852.

- Charge Cell #28 on 1B-SB emergency battery per procedure CM-E0003, Station Battery Single Cell Charging, and retest in accordance with procedure MST-E0011, 1E Battery Quarterly Test.

The performance of work was satisfactory with proper documentation of removed components and independent verification of the reinstallation.

a. The inspector requested a listing of all priority work performed in the previous thirty days. This printout contained 19 work tickets. A review of work ticket approval times compared to timekeeping data revealed that one priority 3 job which regarded the repair of the "A" emergency diesel generator control panel was started before preplanning was performed.

   The licensee's procedure for controlling maintenance, MMM-012, Maintenance Work Control Procedure, contains provisions for the conduct of priority/emergency maintenance and allows the shift foreman to authorize the performance of maintenance activities without prior preplanning, reviews, and without a planned work ticket in emergency situations where immediate actions are required to protect the health and safety of the public, protect equipment or personnel, and prevent the deterioration of plant conditions to potential unsafe levels. This procedure listed priority level 1, 2 and 3 as potential activities which allow maintenance initiation without the prior preplanning. The licensee defines priority 2 and 3 maintenance as that required to correct a condition which is in violation of regulatory requirements and to correct a condition which requires an imminent plant shutdown.

The inspector reviewed Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation), section 1.8 of the FSAR, and discussed the intent of the work control procedure with licensee management. Section 9 of Regulatory Guide 1.33, Procedures for Performing Maintenance, states that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures. Section 1.8 of the FSAR describes the extent to which the licensee complies with Regulatory Guide 1.33 and states that maintenance shall be preplanned and performed in accordance with written procedures except in emergency or abnormal operating conditions where immediate actions are required to protect the health and safety of the public, to protect equipment or personnel, or to prevent the deterioration of plant conditions to unsafe levels.

Although the inspector agreed that certain situations which involve a danger to the health and safety of the public, or to protect plant personnel and equipment, must be expeditiously corrected, the inspector considered the omission of preplanning to avoid imminent plant shutdowns to be a deviation of the written commitment in the FSAR.

Deviation (400/93-08-03): Performance of non-emergency safety-related maintenance without preplanning.

b. Several problems were experienced with air handler AH-92A. This fan supplies cooling air to a safety-related motor control center. On March 20 licensee personnel noticed that the fan was making an unusual noise and that the shaft was moving excessively. Maintenance was performed which replaced the outboard fan bearing. The cause for the bad bearing was determined to be a loose nut on the bearing locking collar. On March 30 the fan again had to be worked because the outboard fan bearing had seized. The fan shaft was repaired and both fan bearings were replaced to correct the damage. The cause for this condition was determined to be overtight drive belts. On April 1 excessive vibration was noticed on the fan motor. Troubleshooting uncovered that the motor sheave was loose and a key which was supposed to secure this component in place was found on the bottom of the air handler unit. The licensee determined that the key had been absent for some time and this contributed to the motor vibration. The key and a new sheave was installed. The licensee is presently performing an investigation into the root cause for the problems associated with this fan. The inspector considered the maintenance activities to identify and correct the problems with AH-92A to be poor as they resulted in excessive equipment out of service times to repair.

c. On March 18 licensee personnel discovered an outboard seal leak of approximately one gpm on the "B" CSIP. Minutes earlier, control room personnel had received low seal injection flow alarms to the "A" and "B" reactor coolant pumps as well as indications that the charging pump motor was running on higher than normal current, and that pump discharge pressure had decreased to approximately 2500 psig from 2700 psig. Control room personnel immediately secured the pump and declared it inoperable. During the pump disassembly and maintenance activities, licensee personnel unsuccessfully attempted to remove the balancing drum retaining nut which mates with the pump shaft between the discharge impeller and the mechanical seal package. The nut was jammed, indicating that the pump shaft had broken beneath it. The balancing drum, which prevents axial pump thrust and protects the outboard mechanical seal package, had indications of wear. The seal faces had a wear pattern which indicated that they had seen excessive pressures because the balancing drum had failed. Following unsuccessful attempts to fully disassemble the old rotating element, the licensee replaced the entire element and mechanical seal assembly with spares. Following installation of the new pump and seals, the licensee broke the drum retaining nut on the old assembly for further investigation. It was verified that the shaft had indeed been severed below the retaining nut and that this initiated the pump failure. According to licensee personnel, several shaft failures have been reported by the industry for this type of charging/safety injection pump. All three of the CSIPs are 11-stage centrifugal pumps that were manufactured and tested by Pacific Pumps.

The inspector reviewed the pump vendor's technical manual and the licensee's work packages to verify that the pump rebuild had been performed in accordance with vendor recommendations. Although the vendor manual specifies performing a full flow test prior to returning the pump to operable status, the licensee has opted to test the pump on reduced flow due to current plant operating conditions. The licensee will develop a special procedure to accomplish this post-maintenance testing. In the meantime, the performance of the "A" CSIP, which has an operating life similar to the old "B" CSIP, and had a much lower level vibration, will be monitored closely. Licensee management has decided not to replace the rotating element on the "A" CSIP until signs of impending failure is seen or occurs.

Inspector Follow-up Item (400/93-08-04): Follow the licensee's activities to retest the "B" CSIP, determine the root cause of its failure, and assess any generic implications.

d. On March 16, during performance of procedure MST-E0011, 1E Battery Quarterly Test, the individual cell voltage reading on 1B-SB battery cell #28 fell below the 2.13 Vdc limit. The licensee began a 24-hour continuous individual cell charge on March 18 to bring the cell voltage back above the Category B requirement. Technical

Specification 4.8.2.1 states that the 1E emergency batteries may be considered operable for any Category B parameter outside the "limits" shown on Table 4.8-2 as long as the parameters are within their "allowable values" and restored to within limits within 7 days. On Friday, March 19, three days after the adverse condition was identified, licensee personnel began addressing the possibility that, following the continuous recharge which was still ongoing at the time, the #28 cell voltage could dip even further below the "allowable value" of 2.07 Vdc and render the battery immediately inoperable. This led the licensee to develop contingencies to help avoid a TS required shutdown. Contingency plans included the potential replacement of the affected cell with another from one of the non-safety station batteries. This option would involve a dedication process for the non-Class 1E cell and would require the erecting of heavy steel equipment over the safety-related battery for cell removal and installation purposes. Another option included jumpering out the affected cell and performing an engineering evaluation to show the battery remained operable. The later option was discarded when the supporting evaluation would not be ready before the 6-hour TS shutdown action statement expired.

Although the situation corrected itself when the cell voltage stabilized at 2.25 Vdc following the 24 hour recharge, the inspector concluded that the licensee's overall coordination of contingency efforts was weak in two areas. Engineering personnel were reluctant to explore more fully the safer option of jumpering out the battery cell because of a time constraint. The other weakness was the fact that contingencies were not even addressed until the cell recharge was half completed, three days after the initial surveillance test. The inspector concluded that better coordination of contingency planning and engineering resources would have been beneficial. The licensee has subsequently developed an engineering evaluation which will allow jumpering out one bad cell in the "A" and "B" emergency batteries. In addition, modifications are being developed which will install spare cells in the "A" and "B" 1E battery rooms and have them ready for immediate installation.

5. Design Changes and Modifications (37828)

Installation of new or modified systems were reviewed to verify that the changes were reviewed and approved in accordance with 10 CFR 50.59, that the changes were performed in accordance with technically adequate and approved procedures, that subsequent testing and test results met acceptance criteria or deviations were resolved in an acceptable manner, and that appropriate drawings and facility procedures were revised as necessary. This review included selected observations of modifications and/or testing in progress. The following modifications/design changes were reviewed:

- PCR-3995 Emergency Diesel Starting Air Modifications

- PCR-6841 PCV-8400A Modification
- PCR-6847 AH-92-1A Bearing Surface Repair
- PCR-6852 Containment Vacuum Relief Actuation Setpoint

Temporary modification PCR-6841 was installed to reduce containment sump inleakage. As mentioned in NRC Inspection Report 50-400/93-07, containment sump inleakage had increased to two gpm. During this inspection period, sump inleakage increased to approximately four gpm. On March 22 licensee personnel observed a reduction in the leakage to approximately 0.2 gpm. The licensee also observed that a back pressure control valve, 1BD-8, in the blowdown line for the "A" steam generator had repositioned to the full open position. The licensee believes that this valve backseated and reduced any secondary valve packing leakage which was present. The temporary modification was installed to apply a false open signal to the valve's differential pressure transmitter controller. This action did not affect containment integrity since this valve does not receive any isolation signals. No violations or deviations were identified.

6. Fire Protection/Prevention Program (64704)

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.

The inspectors observed two fire fighting practice sessions which involved most of the fire brigades. During the practice sessions a fire brigade combats an actual building fire which was fueled by natural gas. These activities occurred at the Wake County Fire Training Center which is located adjacent to the plant. Search and rescue techniques were also practiced. The inspector considered the response of the fire brigades to be acceptable and that the use of appropriate fire fighting equipment and fire fighting techniques were satisfactorily demonstrated.

The licensee has relocated the fire brigade turnout/dressout area from the turbine building to the waste processing building. The inspector toured the new turnout area and found the conditions to be satisfactory with adequate room for the manual firefighting equipment and turnout clothing.

As discussed in NRC Inspection Reports 50-400/91-23 and 50-400/93-07, fire brigade staffing duties were assigned to radwaste operations personnel and roving fire patrol/tours assigned to security personnel. Therefore staffing was not checked during this inspection.

An inventory of control room Self Contained Breathing Apparatus (SCBA) was performed. The licensee maintains 10 SCBA's available with 10 spare air bottles in the control room. This equipment was controlled in accordance with procedure AP-200, Emergency Equipment Inventory. The

inspector also checked the SCBA inventory in the fire brigade turnout area. The licensee maintains eight SCBA's in the turnout area. This equipment was controlled in accordance with procedure ORT-3001, Fire Equipment Inspection Monthly Interval. The inspector found that all of the observed SCBA's had recently been inspected to ensure it was ready for emergency use. The inspector considered the administrative controls provided for SCBA inventory and inspection to be good.

7. Essential Services Chilled Water System Reliability (71707)

During this inspection period, the operability and reliability of the Essential Services Chilled Water System (ESCWS) was reviewed. Since 1987, four LERs have been written on chiller inoperability, LERs 87-07, 90-03, 90-17, and 91-04. These problems were reported because both trains of ESCWS were inoperable (one train down for pre-planned maintenance and the other train tripped for some reason). Also, plant adverse condition reports were reviewed by the inspector and an interview with the system engineer was held to determine recurrent chiller problems.

The two ESCWS units utilize refrigerant to produce cool chilled water which is supplied to the cooling coils of the various safety-related air handling unit room coolers. The 752 ton ESCWS units are oversized for the low heat loads generated during normal plant operation. Since these units are also used during normal plant operation, the low load has resulted in some operating problems in the past. The two ESCWS trains are located within the same room and in the same fire area. Each train, however, is spacially separated as per the fire protection hazards analysis.

The chiller design incorporates a 30 minute anti-recycle device to limit the number of automatic starts, this does not pose a safety concern since this feature is bypassed on a safety injection signal. Various trips have occurred on the ESCWS units since 1987. In addition, corrective actions have been taken to address the identified problems including; operating/maintenance procedure enhancements, training, and plant modifications.

Trip		Corrective Action
1 Overcurrent Trip	-	No change. Trip due to bad overcurrent relay.
2 Very Low Load	-	Relocated service water modulating valves. Deleted condenser water low flow trip. Added controls for ESW recirculation pump (P-7).
1 High Lube Oil Temperature	-	Calibrated thermocouples.
1 High Refrigerant Pressure	-	Added new filters/regulators for air supply to expansion tank.

		Changed expansion tank makeup water source from fire service to demineralized water. Valves upgraded to stainless steel disks and bodies.
1 Low Chilled Water Flow	-	Same as high refrigerant pressure.
4 Low Oil Pressure	-	Oil type changed from C to B. One hour minimum run time to determine proper oil level. Setpoint reduced from 25 psig - 20 psig.

Since the latest plant modifications during the last refueling outage in November 1992, the ESCWS chiller units have operated without additional problems. Although the low oil pressure trip setpoint was reduced in September 1991, two trips of this type reoccurred in July 1992. In one of these cases, loose relay electrical connections were found to have attributed to the trip signal. In order to further increase chiller reliability, the licensee is developing a plant modification (PCR-6493, ESCWS Chiller Low Flow/Temperature Trip Alarm) to bypass most of the chiller trip signals during an engineered safeguards actuation.

Inspector Followup Item (400/93-08-05): Follow the licensee's activities to increase ESCWS reliability.

8. Review of Licensee Event Reports (92700)

The following LER was reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events that were reported immediately were reviewed as they occurred to determine if the TS were satisfied. LERs were reviewed in accordance with the current NRC Enforcement Policy.

(Closed) LER 93-01: This LER reported that Operations Surveillance Test Procedure OST-1024, On-site Power Distribution Verification, did not require operators to check the position of the 2CB battery input breakers to the 7.5 KVa instrument inverters. The breakers must be closed for the inverters to receive a backup DC power supply from their associated 125-volt DC busses. Because of the procedural omission, the breaker positions had not been verified during the weekly surveillance test since plant startup, which constituted a TS violation. The licensee has revised the procedure to include position verification for the 2CB and 3CB backup DC supply breakers. A copy of the revised procedures has been placed in the required reading for operator training purposes.

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

(Open) Violation 400/92-17-02: Failure to correct a deficiency with the emergency diesel generator starting air system.

The inspector reviewed and verified completion of the corrective actions listed in the licensee's response letter dated November 2, 1992. The licensee completed modifications to the starting air systems which installed additional filtration and dryer units. Also, the air system was blown down with clean dry air and the PCR process has been removed from the corrective action program subprogram classification. Remaining action to be accomplished includes a review of existing PCRs to ensure that an ACR exists for any adverse conditions.

10. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on April 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 Violations, Deviation, and Inspector Follow-up Items 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
400/93-08-01	VIO: Failure to properly implement plant procedures, paragraph 2.c.(1).
400/93-08-02	NCV: Failure to maintain appropriate actuation setpoints for the containment vacuum relief system, paragraph 2.c.(2).
400/93-08-03	DEV: Performance of non-emergency safety-related maintenance without preplanning, paragraph 4.a.
400/93-08-04	IFI: Follow the licensee's activities to restore the "B" CSIP to operable status and review the generic implications of the pump shaft failure, paragraph 4.c.
400/93-08-05	IFI: Follow the licensee's activities to increase ESCWS reliability, paragraph 7.

11. Acronyms and Initialisms

ACR - Adverse Condition Report
ASME - American Society of Mechanical Engineers

CFR	-	Code of Federal Regulations
CSIP	-	Charging Safety Injection Pump
EPT	-	Engineering Performance Test
ESCWS	-	Essential Services Chilled Water System
ESW	-	Emergency Service Water
FSAR	-	Final Safety Analysis Report
gpm	-	gallon per minute
IFI	-	Inspector Follow-up Item
INWG	-	Inches Water Gauge
ISI	-	Inservice Inspection
IST	-	Inservice Testing
ITF	-	Increased Testing Frequency
LER	-	Licensee Event Report
MPT	-	Maintenance Performance Test
MST	-	Maintenance Surveillance Test
NCV	-	Non-Cited Violation
NRC	-	Nuclear Regulatory Commission
OST	-	Operations Surveillance Test
PCR	-	Plant Change Request
psig	-	pounds per square inch gage
RAB	-	Reactor Auxiliary Building
RCS/RC	-	Reactor Coolant System
RHR	-	Residual Heat Removal
SCBA	-	Self Contained Breathing Apparatus
TDAFW	-	Turbine Driven Auxiliary Feedwater
TS	-	Technical Specification
Vac	-	Volt alternating current
Vdc	-	Volt direct current
VIO	-	Violation