UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report No.: 50-261/96-01

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

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson Unit 2

Inspection Conducted: January 1-20, 1996

Lead Inspector: Jerry Wiseman 2/16/96
for W. T. Orders, Senior Resident Inspector Date Signed

Other Inspector: J. Zeiler, Resident Inspector
J. Coley, Region II Inspector (3.1.1; 3.1.2; 3.3.1)
W. Miller, Region II Inspector (2.3; 3.1.3; 3.3.2; 4.2.1; 4.2.2; 5.1.3.1)

Approved by: M B Shymlock 2-16-96
Milton B. Shymlock, Chief Date Signed
Reactor Projects Branch 4
Division of Reactor Projects

SUMMARY

SCOPE:

Inspections were conducted by resident and regional inspectors in the areas of plant operations which included Engineered Safety Features Walkdown - Auxiliary Feedwater System, Effectiveness of Licensee Control in Identifying, Resolving, and Preventing Problems; maintenance and surveillance which included A CVCS Charging Pump Packing Leakage Repairs, RHR Pump Room Cooler HVH-8A Replacement, Spent Fuel Building Exhaust Air Handling Unit, Surveillance Observations of OST 302-1 Service Water Component Test and, Close Out of Open Issues; engineering which included ESR 95-00929, Rev. 3, RHR Pump Room Cooler Equipment Evaluation, Expert Operability Analysis Number 96-01, ESR 96-00028, Rev.1, Evaluate Replacement Motor for HVH-5A and, Close Out of Open Issues; and plant support Physical Security Program, Radiological Protection Program, Inadequate Training on New Personnel Contamination Monitors, Fire Protection Program and, Motor Driven Fire Pump Test.

ENCLOSURE 2

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RESULTS:

Plant Operations

Walkdown inspection of the Auxiliary Feedwater System verified that the system was operable and, except for two valves found to be throttled as opposed to fully open, the system was well maintained. The misalignment of these valves was identified as Violation 50-261/96-01-01 (paragraph 2.3).

Maintenance

Plant corrective maintenance was properly controlled and coordinated and was conducted in accordance with applicable approved instructions by knowledgeable and skilled craft personnel (paragraph 3.1). The initial measurement method used to determine the minimum wall thickness for RHR pump room cooler piping was identified as being weak (paragraph 3.1.2). The effectiveness of licensee corrective actions to resolve instrument line configuration problems associated with Residual Heat Removal flow transmitter FT-605 was determined to be weak. However, management attention and planned corrective actions to address these, as well as other transmitter configuration problems was now evident (paragraph 3.3.1).

Engineering

Several engineering evaluations reviewed in detail were considered to be detailed, utilized conservative assumptions, and were developed and approved in accordance with licensee administrative requirements (paragraph 4.1).

In general, the engineering staff was effective and timely in responding to plant problems and interfacing with operations. However, an example was identified where a detailed evaluation of worn equipment parts and abnormal noise heard in the A Charging Pump was not planned until questioned by the inspectors (paragraph 3.1.1 and 4.1).

Plant Support

Initial plant personnel training on new Radiation Control Area exit contamination monitors was ineffective. Subsequent training and instructions were provided which corrected this condition (paragraph 5.1.2.1).

The motor driven fire pump was satisfactorily tested using a well written procedure, performed by conscientious test personnel who demonstrated a knowledge of the fire protection water system and the test requirements (paragraph 5.1.3.1).

REPORT DETAILS

1.0 PERSONS CONTACTED

Licensee Employees:

*Clark, B., Manager, Maintenance
Clements, J., Manager, Site Support Services
*Crook, D., Senior Specialist, Licensing/Regulatory Compliance
Gudger, D., Senior Specialist, Licensing/Regulatory Programs
Hinnant, C., Vice President, Robinson Nuclear Plant
*Keenan, J., Director, Site Operations
Krich, R., Manager, Regulatory Affairs
*Meyer, B., Manager, Operations
*Miller, G., Manager, Robinson Engineering Support Services
*Moyer, J., Manager, Nuclear Assessment Section
*Stoddard, D., Manager, Operating Experience Assessment
Warden, R., Superintendent, Plant Support Assessment
Wilkerson, T., Manager, Environmental Control
*Young, D., Plant General Manager

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

NRC Personnel:

W. Orders, Senior Resident Inspector
*J. Zeiler, Resident Inspector

*Attended exit interview

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

2.0 PLANT OPERATIONS (71707 and 92901)

2.1 Plant Status

The unit operated at or near full power for the entire report period with no major problems.

2.2 Plant Operations Observation Activities

The inspectors evaluated licensee activities to determine if the facility was being operated safely and in conformance with regulatory requirements. These activities were assessed through direct observation of ongoing activities, facility tours, control room observations, discussions with licensee personnel, evaluation of equipment status, and review of facility records. The inspectors evaluated the operating staff to determine if they were knowledgeable of plant conditions, responded properly to alarms, and adhered

to procedures and applicable administrative controls. Selected shift changes were observed to determine that system status continuity was maintained and that proper control room staffing existed. Routine plant tours were conducted to evaluate equipment operability and to assess the general condition of plant equipment.

2.3 Engineered Safety Features Walkdown - Auxiliary Feedwater System

The inspectors performed a review and walkdown inspection of the accessible portions of the AFW System to verify system operability and to determine if the system alignment procedure conformed to plant drawings and the as-built configuration. This evaluation and inspection used the following documents:

Drawing Nos. G-190197, Sheets 1 - 4, Feedwater, Condensate, and Air Evacuation System Flow Diagram

System Description SD-027, Feedwater System (Revision 15, 12/6/95)

Updated FSAR, Section 10.4.8

OP-402, AFW System (Revision 38, 6/29/95)

OP-402 Attachment 9.1, AFW Valve Checklist

Based on review of the feedwater system flow diagrams and the AFW System valve alignment checklist procedure, appropriate valves were found to be included in the checklist procedure.

During the walkdown inspection of the AFW System, the inspectors reviewed the following: alignment of electrical breakers to the AFW pumps and MOV valves and alignment of principle valves in the system; installation of hangers and supports; closure of valves to drain and vent pipe openings and installation of pipe caps; labeling and identification of pumps, valves, and components; and lubrication levels in all visible oil and lubrication devices. The AFW piping system was inspected for leakage. The housekeeping in the AFW System areas was inspected to determine if transient combustibles were stored in the areas.

The equipment condition of the AFW system was good and no major system leaks were noted. Several small minor leaks were noted but the licensee had previously identified these leaks and had submitted work requests to correct them. Housekeeping in these areas was satisfactory.

One discrepancy was identified. Two valves, AFW-110, AFW Pump A Recirculation Isolation Valve, and AFW-111, AFW Pump B Recirculation Isolation Valve, were found by the inspector to be in a throttled position, approximately 40 percent closed or 60 percent open. The AFW System Valve Checklist, OP-402 Attachment 9.1, requires these valves to be in the full open position.

These discrepancies were reported to the Shift Supervisor. The Shift Supervisor promptly sent an Auxiliary Unit Operator to check these valves. The operator confirmed that these valves were not fully open. The valves were subsequently opened. In addition, all of the AFW valves in the AFW pump room were also promptly checked and verified by Operations to be correctly aligned. The inspector reviewed the most current valve alignment checklist for the AFW System which was completed on June 1, 1995. This checklist indicated that these valves had been inspected and independently verified to be in the fully open position. Procedures OMM-1, Operations - Conduct of Operations, and PLP-030, Independent Verification, required that correct valve positions should be determined and verified by hands-on checking of the valve, except for valves located in radiation areas for ALARA concerns. The licensee issued Condition Report 96-0126 to review this event, determine the cause, and to identify action necessary to prevent recurrence. One of the actions in process by the licensee was an evaluation to determine if any work activities had required these valves to be realigned since completion of the June 1995 valve checklist. At the conclusion of this inspection the Condition Report was still in review.

The AFW System was operable and the throttling of valve Nos. AFW-110 and AFW-111 had no operational effect on the AFW System since restrictive orifices were installed downstream from these valves. However, the failure to maintain the alignment of an engineered safety system in accordance with design drawings, procedures and operational requirements could result in a potentially serious problem. Therefore, this item is identified as Violation 50-261/96-01-01, AFW System Valve Misalignment.

The calibration data for AFW System instrumentation was also reviewed by the inspectors. Current calibration records (ie., stickers) were not installed on AFW instrumentation but, were maintained by calibration procedures controlled by the I&C Department. The inspectors reviewed the calibration data for a sample of five pressure instruments (PI-1425, PI-1426, PI-1478-1, PI-1479-1, and PI-1480-1) and verified that these instruments were included in the licensee's routine calibration program and that the calibration for each of these instruments was up to date.

The inspectors reviewed the completed test procedures for the MDAFW pumps, OST-201-A, MDAFW System Component Test - Train "A" (Monthly), and OST-201-B MDAFW System Component Test - Train "B" (Monthly), which were completed on January 3, 1996, and January 16, 1996, respectively. The results of these completed tests indicated that the MDAFW pumps met the acceptance criteria. The inspectors did not note any discrepancies in the completed test procedures. The most recent test on the turbine driven AFW pump was satisfactory and was witnessed by the NRC. The results of this test were documented in NRC Inspection Report No. 50-261/95-30.

Based on this evaluation, the AFW System was operable and, except for the two misaligned valves, the system appeared to be well maintained.

Within the area inspected, one violation was identified.

2.4 Effectiveness of Licensee Control in Identifying, Resolving, and Preventing Problems

The inspectors evaluated certain activities of the Plant Nuclear Safety Committee to determine whether the onsite review functions were conducted in accordance with TS and other regulatory requirements. In particular, the inspectors attended meetings conducted on January 10 and January 16, 1996. It was ascertained that provisions of the TS dealing with membership, review process, frequency, and qualifications were satisfied. The minutes from these meetings were reviewed to confirm that decisions and recommendations were accurately reflected.

3.0 MAINTENANCE (61726, 62703, and 92902)

3.1 Maintenance Observations

The inspectors observed safety-related maintenance activities on systems and components to determine if the activities were conducted in accordance with regulatory requirements, approved procedures, and appropriate industry codes and standards. The inspectors reviewed associated administrative, material, testing, and radiological control requirements to determine licensee compliance. The inspectors witnesses and/or reviewed portions of the following maintenance activities:

3.1.1 A CVCS Charging Pump Packing Leakage Repairs

On January 4, the licensee initiated planned maintenance to repair leakage identified from the secondary stuffing box packing of the A positive displacement CVCS charging pump. TS 3.2.2 requires only two of the three charging pumps be operable while operating at power, therefore, maintenance could be performed on the A charging pump without entering a TS LCO while it was inoperable.

The repair activity was performed under WR/JO 95-AQCA1. Corrective Maintenance procedure CM-034, Charging Pump Stuffing Box Maintenance, was used to disassemble, replace the packing, and reassemble the pump. In addition to the packing, engineering personnel also decided to replace all three fluid cylinder plungers due to the extended service life already experienced with the existing plungers. During the subsequent post-maintenance testing, the pump did not develop the expected flow rate and an abnormal noise was heard from inside the pump casing. Based on these irregularities, the licensee decided to disassemble the pump and replace the internal suction and discharge check valves. It was believed that these valves were not seating properly resulting in the problems experienced. This work was performed under WR/JO 96-AABD1 using procedure CM-035, Charging Pump Maintenance Valve Disassembly and Reassembly. The inspectors witnessed aspects of work activities associated with WR/JOs 95-AQCA1 and 96-AABD1 and verified the following: 1) the pump was properly cleared (tagged out) by operations personnel, 2) proper approvals were obtained prior to beginning work, 3) the proper revision of CM-034 was utilized and being followed, 4) required tools were properly calibrated and utilized, 5) correct parts were used, and, 6) personnel were qualified and knowledgeable.

In addition, the inspectors reviewed the vendor manual for the pump (Union Pump Company) and verified that applicable assembly and reassembly guidance was incorporated into CM-034 and CM-035. Based on these inspection activities, no discrepancies were identified. However, after the pump was tested and returned to service following the check valve replacement, the inspectors noticed a distinct metallic ping noise originating from inside the pump. This noise appeared to be connected with the opening and closing of the suction or discharge check valves and was not characteristic in the B or C charging pumps. To obtain additional information on the cause of the noise in the pump, the inspectors discussed this observation with the system engineer.

The inspectors learned that while engineering had looked briefly at the valves as they were removed, a detailed evaluation of the worn valve parts had not been conducted. This was due primarily because a decision was made based on service life of the valves to replace them with new ones. The inspectors requested to see the old valves to determine whether the wear on these valves would indicate why this pump made a metallic noise while the others did not. The inspectors were told that the valves had been thrown in radwaste, but they would be retrieved for the licensee's engineering support and the inspectors to examine. The inspectors subsequent examination revealed that two of the discharge valves had significant wear on the inboard and middle guide indicating the discharge valve seat may have a slight irregularity in its seating surface. Subsequent discussions with the previous system engineer for the charging pumps indicated that the A pump had always made a metallic noise while operating, however, a detailed evaluation of this condition and its potential impact to the pump had never been performed. The inspectors believed that the noise could be an indication of a problem that may be contributing to the valve ware. Following discussions with the mechanical engineering manager regarding these concerns, the licensee indicated that a more detailed evaluation of the pump noise and valve wear would be performed. Regardless of the conclusions of this investigation, the inspectors considered that engineering had not been proactive or thorough in evaluating potentially adverse pump conditions (i.e., abnormal pump noise and worn equipment parts) when they were initially identified.

3.1.2 RHR Pump Room Cooler HVH-8A Replacement

This corrective maintenance involved the replacement of one of the RHR pump room coolers (HVH-8A) due to an excessive service water tube leak. The maintenance was performed under WR/JO 95-AQCI1. The inspectors witnessed aspects of the work activities and verified the following: 1) proper approvals were obtained prior to beginning work, 2) approved procedures/instructions were used and followed, 3) correct parts and tools were used, 4) required tools were properly calibrated, 5) safety and radiation controls were observed, 6) personnel were qualified and knowledgeable, and, 7) supervision and QC was adequate. When the service water lines were disconnected from the cooler and taken to the hot machine shop for modification, pipe wall corrosion was found in the copper service water piping. During the initial evaluation process to determine whether the pipe could be used again, a rapid response team engineer was assigned to support the work activities.

The engineer directed maintenance personnel to obtain the minimum pipe wall thickness. The method selected was to use inside calipers for the pipe internal surface and outside calipers which would fit in the thread root of the outside portion of the pipe. The inspectors observed the measurements being taken and questioned how this method could determine minimum wall thickness. What was being obtained was the average wall thickness since the good side of the pipe wall was being averaged with the bad. In addition, the corroded area of the pipe also had some significant pits which were not being considered in the measurement method. The engineer instructed a maintenance technician to obtain a needle point micrometer in order to consider the pipe pits in the measurement method. The inspectors later learned that a materials engineer had examined and rejected the pipe due to it not meeting minimum thickness criteria. The inspectors determined that this measurement was properly obtained. The inspectors considered the methods used to take the initial measurements of the pipe minimum wall thickness to indicate a weakness in the licensee's evaluation of pipe discontinuities which could have resulted in defective material possibility being reinstalled into the system.

The licensee subsequently substituted 316L stainless steel pipe for the copper pipe. Work was completed for the service water pipe modification and the service water pipe was reconnected to the cooler.

3.1.3 Spent Fuel Building Exhaust Air Handling Unit

The Fuel Handing Building, including the Spent Fuel Pool area, has two ventilation systems. The system normally in operation uses supply fan HVS-2 and exhaust fan HVE-15. The emergency system uses two different fans, supply fan HVS-4 and exhaust fan HVE-15A. Exhaust fan HVE-15A also includes an electric heater and charcoal filter unit. The emergency ventilation system is normally only operated during fuel movement in the spent fuel pool. Both of these systems discharge to the plant stack.

On January 16, during the performance of fuel movement and fuel inspection activities in the spent fuel pool, air handling supply fan HVS-4 and exhaust fan HVE-15A tripped. The fuel inspection activities were discontinued and WR/JO 96-AAGH1 was issued to investigate and determine why these fans had tripped.

The maintenance investigation per WR/JO 96-AAGH1 found that the electrical connecting leads to the motor winding within the motor raceway terminal box for fan HVE-15A had been loose and shorted to ground. This short caused the breaker for fan HVE-15A to trip. The inspectors monitored the repair activities. The repair activities included replacement of approximately 50 feet of power cable from the motor for fan HVE-15A to the motor starter, connecting the power cables to the motor leads, megger testing of the power supply wiring and the wiring for the motor to fan HVE-15A, verification of correct motor rotation, and post maintenance testing by running the fan for several hours to assure proper operation.

The inspectors reviewed the completed work package and noted that appropriate hold points had been included in the WR/JO and that appropriate inspection and verification had been performed by a QC Inspector or independent verifier. No

discrepancies were noted. The licensee issued a condition report for additional review of this event to determine the root cause of the motor fan failure and to determine what additional actions were warranted.

3.2 Surveillance Observations

The inspectors evaluated certain surveillance activities to determine if these activities were conducted in accordance with license requirements. For the surveillance test procedures listed below, the inspectors determined that precautions and LCOs were adhered to, required administrative approvals and tagouts were obtained prior to test initiation, testing was accomplished by qualified personnel in accordance with an approved test procedure, test instrumentation was properly calibrated, the tests were completed at the required frequency, and the tests conformed to TS requirements. Upon test completion, the inspectors verified that the recorded test data was complete, accurate, and met TS requirements, test discrepancies were properly documented and rectified, and the systems were properly returned to service. Specifically, the inspectors witnessed and/or reviewed portions of the following test activities:

OST 302-1 Service Water Component Test - Quarterly

3.3 Close Out Issues

3.3.1 (Closed) VIO 50-261/94-17-02: Failure to Correct Improperly Routed Instrument Sensing Lines While Troubleshooting Repetitive Gas Binding of RHR Flow Indicator

The licensee responded to this violation by letter dated September 14, 1994. As a result of the FT-605 air entrapment issue, some of the sensing line piping was rerouted to provide the slope of 1 inch rise per foot as recommended by the vendor (Rosemount). The licensee performed a walkdown of all flow transmitter sensing lines (in July, 1994) and determined that the sensing lines were either routed properly or were evaluated as acceptable. On November 26, 1995, flow transmitter (FT-605) was again reported to be indicating a flow of up to 900 gpm with no flow in the RHR system. This event occurred shortly after the flow transmitter had been dry calibrated. At this point the licensee discovered that not all the sensing lines were properly sloped. The remaining sensing lines for this transmitter were determined to be properly routed at that time. However, during the investigation of the Significant Condition Report (No. 95-2800) generated for this latest event, the engineer discovered that one utility had found that performing wet calibrations and backfilling from the bottom of the transmitter were effective and a cost efficient means of resolving air entrapment difficulties in sensing lines which do not have the recommended slope. These recommendations, however, were not implemented as corrective action for FT-605.

On November 29, 1995, following an investigation of a discrepancy in Safety Injection system accumulator LT indication, engineering personnel discovered that, between October 28, 1995, and November 3, 1995, both of the LTs for the C accumulator had been offset upscale to the extent that the actual level was 6 to 7% lower than indicated. This event was caused by failure to implement

adequate calibration procedures for the accumulator LTs and inadequacies in the configuration of the transmitter piping and tubing. This resulted in difficulties in removing trapped gasses. The licensee reported the event in LER 95-009-00, dated December 29, 1995 and issued a Significant Condition Report (CR 95-02762). Violation 50-261/95-30-01 was issued for inadequate procedures.

Corrective actions for these issues included a field walkdown and maintenance history review on all safety related differential pressure transmitters (flow and level). The purpose of the walkdown was to provide information on the actual field installed configuration of the process sensing tubing. The licensee identified the corrective actions as item #2 on the Robinson Nuclear Plant "Top Ten" Equipment Issues List. This required that all safety related transmitters be identified, walkdowns be performed of all accessible tubing configurations, a history search be performed for problem instruments, a "hit list" of problem instruments be established, a corrective action plan developed for each problem instrument, and establish the industry standard for the calibration of differential pressure transmitters cells (i.e. dry, wet, backfill, etc.). Since the corrective action in LER 95-009-00 for the accumulators level transmitters will re-evaluate the corrective actions taken on Violation No. 50-261/94-17-02 (FT-605), the inspectors considered this violation closed. The adequacy of the licensee's corrective actions to address this and other transmitter configuration inadequacies will be tracked as part of the closeout review for LER 95-009-00 and VIO 50-261/95-30-01.

3.3.2 (Closed) LER 261/94-003-02: Technical Specification Required Shutdown Due to Emergency Diesel Generator Inoperability

This event occurred on February 18, 1994, when a locking pin for the modulating air damper to EDG B came loose and was propelled through the engine's air system damaging the scavenging air blower and turbocharger. The damaged components were replaced and EDG B was returned to service.

The corrective action for this event included enhancements in the investigation procedures for plant events. The NRC review and evaluation of this event resulted in the issuance of Violation 50-261/94-08-02. This issue was documented in NRC Inspection Report Nos. 50-261/94-04 and 94-08. The licensee's corrective actions to prevent recurrence for the violation and the corrective action for this LER are the same. The corrective action for the violation was reviewed and found acceptable, and was closed as documented in NRC Inspection Report 50-261/95-29. Therefore, based on this previous review, LER 94-003-02 is closed.

3.3.3 (Closed) LER 50-261/94-006-00: Manual Reactor Trip Due to Electro-Hydraulic System Oil Leak

On April 3, 1994, with the unit operating at full power, a load reduction was initiated due to a leak in the E-H oil system. The E-H oil pumps tripped on low E-H oil level and the operators manually tripped the reactor prior to an

automatic reactor trip on load reduction. The cause of this event was the failure of an O-ring which was incorrectly installed in a turbine governor valve. Following the unit's shutdown, all of the other E-H Control System turbine valve O-rings were replaced.

The corrective actions taken for this LER included: covering this event in the craft training program, counselling of individuals responsible for the improperly assembled turbine valve, and inclusion of the E-H Control System into the plant's preventive maintenance program.

The inspectors reviewed Adverse Condition Report 94-0598 and verified that the corrective actions discussed above had been completed. This LER is closed.

3.3.4 (Closed) LER 50-261/94-011-01: Technical Specification 3.0: Emergency Diesel Generator Inoperability, and,

(Closed) LER 50-261/94-015-01: Technical Specification 3.0: Emergency Diesel Generator Inoperability

These LERs identified a number of dates in which the plant was operating at full power with one EDG out of service for maintenance and the redundant EDG out of service for approximately three hours per day to meet the operability testing requirements of the TS. During these testing evolutions, off site power was available to the unit and operators were located in the room of the EDG being tested with the ability to manually place the EDG in service should off-site power be lost.

To resolve this issue, the licensee submitted a TS change request to the NRC that eliminated, in most cases, the requirement to test the redundant EDG when one of the two EDGs is inoperable. The inspector reviewed the TS and verified that this change had been incorporated into the TS by Amendment 158. Based on this review, these LERs are closed.

4.0 ENGINEERING (37551 and 92903)

4.1 Engineering Support Activities

Throughout the inspection period, engineering evaluations of problems and incidents were reviewed and discussions were held with engineering personnel to assess the effectiveness of the licensee's controls for identifying, resolving, and preventing problems. The following engineering evaluations were reviewed:

4.1.1 ESR 95-00929, Rev. 3, RHR Pump Room Cooler Equipment Evaluation

Due to excessive service water tube leakage, the licensee decided to replace the cooler associated with HVH-8A. The RHR room coolers, HVH-8A and HVH-8B, are designed to limit the RHR pump room temperature increase during a design basis accident. This cooling function provides protection for the associated RHR components (RHR pump, valves, and cables) located in the room. The ESR and associated 10 CFR 50.59 were developed to justify the RHR system operability with one of the RHR room coolers, HVH-8A, out of service. The

analysis was conducted assuming HVH-8A was out of service for period of time not to exceed 72 hours. The evaluation considered the room temperature to be below 113°F when the postulated design basis accident began. As long as the starting room temperature remained below 113°F, the temperature gradient during the accident would not exceed the maximum allowed temperature for the most limiting safety-related components in the room. One of the main concerns addressed was the effect on the RHR pump motor bearing oil and grease which can degrade at the higher temperatures. Based on recently changing these lubricants, the Environmental Qualification concerns were not considered to be a problem. As a precaution, however, a 72 hour cooler inoperability period was recommended to ensure the quality of the lubricants would not degrade to a questionable status over the duration of the design basis accident.

4.1.2 Expert Operability Analysis Number 96-01

On January 8, during the performance of MST-903, Station Battery Charge - Monthly, the licensee identified on Battery A that cells 33, 34, and 35 were slightly below the 67°F acceptance criteria required by the procedure. A 72-hour operability determination was initiated for engineering to determine the impact of this condition on the operability of Battery A.

The inspectors reviewed Operability Determination 96-01 which indicated that Battery A was capable of supporting its required electrical loads even if the electrolytic temperature of all of the battery cells were to reach 55°F. Therefore, Battery A was considered past-operable since none of the battery cells approached this temperature. The cause of the lower than normal electrolyte temperature was due to the close proximity of outside makeup air that was directed on these cells. In order to prevent this from recurring, a temporary baffle was constructed using plastic to prevent the makeup air from blowing directly on the battery cells. Periodic monitoring ensured that battery cell temperatures remained above 67°F. The licensee planned to install a permanent baffle arrangement in the near future. Based on this review, the inspectors determined that the disposition of this operability issue was adequate.

4.1.3 ESR 96-00028, Rev.1, Evaluate Replacement Motor for HVH-5A

This engineering evaluation was to evaluate the equivalency for a replacement motor for one of the Control Rod Drive Mechanism Cooling Fans, HVH-5A. These cooling fans are not safety-related, but provide necessary cooling of the Control Rod Drive Mechanisms during power operation. On January 20, the HVH-5A motor failed unexpectedly due to a motor short. An identical replacement motor was not available. The replacement motor differed in that the Full Load Amperes was slightly lower and the RPM was slightly higher than the original. The evaluation was detailed in its consideration of motor equivalency. Those items reviewed in the equivalency determination included: seismic, both electrical and mechanical characteristics, system interfaces, and design impact. The replacement motor was determined to be equal to or exceeded the original motor in all respects.

Based on these inspections, the engineering evaluations were determined to be detailed, utilized conservative assumptions, and were developed and approved in accordance with licensee administrative requirements.

Besides the weakness in engineering support for not initiating a more detailed evaluation of worn equipment parts and abnormal noise heard in the A CVCS Charging Pump following maintenance, the engineering staff was effective and timely in responding to plant problems and interfacing with operations.

4.2 Close Out Issues

4.2.1 (Closed) LER 50-261/94-004-00: Auxiliary Building Outside Design Basis Due to Positive Pressure Conditions

On March 12, 1994, during an outage, containment purge and the auxiliary building supply and exhaust fans were in operation while testing was in progress on an EDG. The EDG testing required the EDG supply and exhaust fans to be in service. This configuration resulted in a decrease in the exhaust flow from the auxiliary building due to back pressure from the plant stack, thereby, creating a positive pressure condition in the Auxiliary Building. This positive pressure condition for the auxiliary building was contrary to the design basis for the building.

The corrective action for this item included a change to Procedure OST-401, EDGs (Slow Speed Start), to require the monitoring of the auxiliary building pressure indicator for negative pressure during operational testing of the EDGs. If the building pressure is not negative, the door to the EDG room being tested is required to be closed and the auxiliary building supply fan (HVS-1) shutdown. If negative pressure still can not be maintained, Operations is required to perform the following: inform Engineering of the condition, determine reporting requirements, and start recording the room temperature hourly for Auxiliary Building Rooms E1 and E2.

The inspector reviewed Adverse Condition Report 94-0488 on this event and Procedures OST-401, EDG (Slow Speed Start) (Revision 45, 7/18/95), OST-409, EDG (Rapid Speed Start) (Revision 17, 7/18/95), OST-410, EDG A (24 Hour Load Test) (Revision 5, 1/5/96), and OST-411, EDG B (24 Hour Load Test) (Revision 5, 1/12/96) and verified that this corrective action had been completed. This item is closed.

4.2.2 (Closed) LER 50-261/94-008-00: Condition Outside Design Basis Due to Control Room HVAC Inoperability

On May 7, 1994, with the unit operating at full power, flow balancing was being performed on the auxiliary building HVAC system. During the process of flow balancing, the licensee discovered that the pressure in a room adjacent to the control room exceeded the pressure that would exist in the control room in the event of an emergency pressurization mode of operation. This condition was outside of the plant's design basis.

Following an NRC evaluation, this item was identified as Deviation 50-261/94-14-01. The licensee responded to this deviation by letter dated July 15, 1994. The corrective action for the deviation included revisions to testing procedures to reflect the requirements of the Technical Specifications and the FSAR commitments. This corrective action was reviewed by the NRC and found acceptable and the deviation was closed by NRC Inspection Report 50-261/95-04. The corrective action for this deviation is essentially the same as the corrective action for LER 94-008-00. This LER is closed.

Subsequently, LER 50-261/94-008-01 (Supplemental) was issued which revised and expanded the analysis and corrective actions identified in the original LER. These additional items were addressed by the NRC through escalated enforcement action and have not yet been reviewed by the NRC. LER 94-008-01 remains open and will be evaluated during the review of the corrective actions for the escalated enforcement violation.

4.2.3 (Closed) VIO 50-261/93-10-01: Failure to Establish Adequate Procedures to Verify Proper AMSAC Operation After Microprocessor Replacement

On April 20, 1993, the resident inspectors identified that complete logic testing of the AMSAC circuitry was not being performed after the A AMSAC channel's microprocessor was replaced and the channel was returned to service. The post-maintenance test procedure that was performed did not include testing of the output logic contacts associated with the A channel. This was determined to be a violation of 10 CFR 50, Appendix B, Criterion V, requiring activities affecting quality be prescribed by documented procedures.

The licensee responded to this violation via letter dated July 1, 1993. Corrective actions involved revision to Special Procedure SP-1198, AMSAC System Test, to incorporate steps for testing the output logic contacts. In addition, the licensee determined that when SP-1198 was originally developed, it had not been reviewed by the proper engineering individual responsible for the AMSAC circuitry. Engineering personnel were counseled on the importance of assuring qualified individuals are utilized to review procedures.

The inspectors reviewed WR/JOs 93-AESZ1 and 93-AEKL1, which were performed April 23 and May 6, 1993, respectively, using the revised procedure to test the output logic contacts of the A and B train AMSAC channels. This testing verified that the contacts were operating properly. Based on this review, this item is closed.

4.2.4 (Closed) IFI 50-261/93-10-02: Lack of Spare Parts Could Result in Prolonged Unavailability of AMSAC

During review of maintenance related to replacing the microprocessors for the AMSAC circuitry, the inspectors noted that spare microprocessors were unavailable and the vendor no longer manufactured the components. Due to microprocessor unavailability approximately three weeks elapsed before another microprocessor could be obtained and the B AMSAC channel returned to service. The inspectors were concerned that future failures of the microprocessors could lead to prolonged unavailability of the AMSAC system.

The inspectors reviewed ESR 9500048 which was initiated to address the AMSAC spare parts unavailability and discussed the status of the licensee's progress in resolving this issue. In July 1995, the licensee located a vendor which could refurbish the microprocessors. At that time, the vendor supplied the licensee with two spare microprocessors. Two additional microprocessors were sent to the vendor for refurbishment. These parts were returned in December 1995. Therefore, the licensee presently has four spare parts available. Based on the availability of a vendor which can supply the licensee with refurbished microprocessors, this IFI was closed.

5.0 PLANT SUPPORT (71707, 71750 and 92904)

5.1 Plant Support Activities

The inspectors conducted plant tours, work activity observations, personnel interviews, and documentation reviews, to determine if plant physical security, radiological protection, and fire protection programs, were properly implemented.

5.1.1 Physical Security Program

The inspectors toured the protected area and observed the protected area fence, including the barbed wire, to ensure that the fence was intact and not in need of repair. Isolation zones were maintained and clear of objects which could shield or conceal personnel. Personnel and packages entering the protected area were searched by detection devices or by hand for firearms, explosive devices, and other contraband. Vehicles were searched, escorted, and secured as required. No deficiencies were identified in this area.

5.1.2 Radiological Protection Program

The inspectors observed radiological control activities to ensure that they were conducted in accordance with regulatory and licensee requirements. Observations included personnel entry and exit from the Radiation Control Area, proper donning of radiological monitoring instrumentation and protective clothing when entering the RCA and contaminated areas, and, proper radiological area postings and controls. No deficiencies were identified in this area.

5.1.2.1 Inadequate Training on New Personnel Contamination Monitors

On December 29, 1995, the licensee completed construction of a new RCA Processing Area. The old processing area was removed from service following activation of the new area. This new RCA entrance was relocated closer to the Auxiliary Building and should allow easier access of personnel and equipment into and out of the RCA. In addition to remodeling, new exit personnel contamination monitors were installed to replace the existing PCM-1 monitors.

On January 4, the inspectors observed traffic into and out of the new processing area and noted numerous instances where personnel failed to properly use the personnel contamination monitors during exit of the RCA.

These instances involved improper placement of the hands such that the opposite side of the palms were not scanned by the monitors.

The inspectors brought each of these instances immediately to the attention of RC personnel on duty in the processing area. The individuals exiting improperly were detained by RC personnel and instructed on re-exiting the monitors properly. As a result, none of the individuals exited without properly using the monitors.

The inspectors reviewed the training/instruction provided for plant personnel on how to properly use the monitors. Information on the opening of the new RCA entrance area was communicated to plant personnel via the weekly plant newsletter (Robinson Review). The inspectors reviewed this newsletter article and noted that it included information regarding the proper use of the monitors. However, the inspectors determined that this was an ineffective mechanism for providing guidance on the use of the monitors, especially since this newsletter is not required reading by plant personnel. After discussions with RC management personnel regarding the problems observed, the licensee decided to provide additional instructions on the proper use of the monitors at upcoming plant employee safety meetings. These meetings were held with all plant employees. The inspectors periodically monitored personnel exiting the RCA during the remainder of the report period and did not observe any further instances of inadequate monitoring.

5.1.3 Fire Protection Program

The inspectors periodically reviewed aspects of the licensee's fire protection program including fire brigade staffing controls, flammable materials storage, housekeeping, control of hazardous chemicals, and maintenance of fire protection equipment. No discrepancies were identified.

5.1.3.1 Motor Driven Fire Pump Test

On January 18, the inspectors witnessed the performance of OST-622, Fire Suppression Water System Motor Driven Fire Pump Test (Annual). The test met the acceptance criteria and verified that the motor driven pump started between 95 and 105 psig and developed a minimum flow of 2,500 gpm at a pressure of 125 psig or greater. The inspectors reviewed the test procedure and noted that the procedure was well written and met the general industry practice for the test of fire pumps. The test procedure required the pump to be tested at shut-off head with no flow, rated head at rated flow, 150 percent of rated flow at 65 percent of rated head, and at two additional points on the original test curve.

This test was performed by two fire protection technicians, two system engineers and two auxiliary unit operators. The test personnel conscientiously performed the test and the system engineers and fire technicians appeared to be knowledgeable of the system and the test requirements.

Within the area examined, no violations or deviations were identified.

6.0 EXIT

The inspection scope and findings were summarized on January 25, 1996, with those persons indicated by an asterisk in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. A listing of inspection findings is provided. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

Type/Item Number	Status	Description and Reference Paragraph
VIO 96-01-01	Open	AFW System Valve Misalignment (paragraph 2.3).
VIO 94-17-02	Closed	Failure to Correct Improperly Routed Instrument Sensing Lines While Troubleshooting Repetitive Gas Binding of RHR Flow Indicator (paragraph 3.3.1).
LER 94-003-02	Closed	Technical Specification Required Shutdown Due to Emergency Diesel Generator Inoperability (paragraph 3.3.2).
LER 94-004-00	Closed	Auxiliary Building Outside Design Basis Due to Positive Pressure Conditions (paragraph 4.2.1).
LER 94-006-00	Closed	Manual Reactor Trip Due to Electro-Hydraulic System Oil Leak (paragraph 3.3.3).
LER 94-008-00	Closed	Condition Outside Design Basis Due to Control Room HVAC Inoperability (paragraph 4.2.2).
LER 94-011-01	Closed	Technical Specification 3.0: Emergency Diesel Generator (EDG) Inoperability (paragraph 3.3.4).
LER 94-015-01	Closed	Technical Specification 3.0: Emergency Diesel Generator (EDG) Inoperability (paragraph 3.3.4).
VIO 93-10-01	Closed	Failure to Establish Adequate Procedures to Verify Proper AMSAC Operation After Microprocessor Replacement (paragraph 4.2.3).
IFI 93-10-02	Closed	Lack of Spare Parts Could Result in Prolonged Unavailability of AMSAC (paragraph 4.2.4).

7.0 ACRONYMS

AFW - Auxiliary Feedwater
ALARA - As Low As Reasonably Achievable
AMSAC - ATWS Mitigation Actuation Circuitry
CFR - Code of Federal Regulations
CM - Corrective Maintenance
CP&L - Carolina Power & Light Company

CR - Condition Report
CVCS - Chemical and Volume Control System
ECCS - Emergency Core Cooling System
EDG - Emergency Diesel Generator
E-H - Electro-Hydraulic
ESR - Engineering Service Request
FSAR - Final Safety Analysis Report
ESF - Engineered Safety Feature
FT - Flow Transmitter
gpm - gallons per minute
HVAC - Heating Ventilation and Air Conditioning
HVE - Heating Ventilation Exhaust
HVS - Heating Ventilation Supply
I&C - Instrumentation & Control
IFI - Inspector Followup Item
LCO - Limiting Condition for Operation
LER - Licensee Event Report
LT - Level Transmitter
MDAFW - Motor Driven Auxiliary Feedwater
MOV - Motor Operated Valve
OMM - Operations Management Manual
OP - Operating Procedure
OST - Operations Surveillance Test
PLP - Plant Program
QC - Quality Control
RC - Radiation Control
RCA - Radiation Control Area
RHR - Residual Heat Removal
SP - Special Procedure
TDAFW - Turbine Driven Auxiliary Feedwater
TM - Temporary Modification
TS - Technical Specifications
VIO - Violation
WR/JO - Work Request/Job Order