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

Report No.: 50-261/95-29

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: October 22 - November 25, 1995

Lead Inspector: J.R. Wiseman 12/20/95
for W. T. Orders, Senior Resident Inspector Date Signed

Other Inspectors: J. Blake, Region II Inspector
J. Coley, Region II Inspector
J. Zeiler, Resident Inspector

Approved by: MB Shymlock 12-20-95
Milton B. Shymlock, Chief Date Signed
Reactor Projects Branch 4
Division of Reactor Projects

SUMMARY

SCOPE:

This routine, resident inspection was conducted in the areas of plant operations, maintenance activities, engineering efforts, and plant support functions. As part of this effort, backshift inspections were conducted.

RESULTS:

In the Plant Operations area, preparation and controls for implementing a steam flow calorimetric used to calculate thermal power were thorough and included strong management involvement. The plant nuclear safety committee conducted a comprehensive review of the steam flow calorimetric and demonstrated emphasis on detailed controls and safe plant operation during its implementation (paragraph 3).

In the Maintenance area, observations of several maintenance items generally indicated good performance. One non-cited violation was identified involving lack of comprehensive controls for conducting refurbishment of Hagan modules associated with the reactor protection instrumentation and control system. During replacement of capacitors on a module for the Loop 2 Overtemperature Delta-Temperature, a capacitor was installed with the reverse polarity (paragraph 4.a).

Enclosure

In the Engineering area, it was determined that the spent fuel pocl cooling heat load design adequately bounded current refueling/operating practices, although, several minor Updated Final Safety Analysis inaccuracies were identified. The licensee's control room emergency ventilation system design was found to adequately limit relative humidity of air circulating through its charcoal filters (paragraph 5).

In the Plant Support area, routine plant evaluations in the areas of radiation protection and security indicated continued good performance (paragraph 6).

REPORT DETAILS

1. PERSONS CONTACTED

Licensee Employees:

B. Clark, Manager, Maintenance
D. Crook, Senior Specialist, Licensing/Regulatory Compliance
D. Gudger, Senior Specialist, Licensing/Regulatory Programs
C. Hinnant, Vice President, Robinson Nuclear Plant
*R. Krich, Manager, Regulatory Affairs
*E. Martin, Manager, Document Services
B. Meyer, Manager, Operations
*G. Miller, Manager, Robinson Engineering Support Services
J. Moyer, Manager, Nuclear Assessment Section
*P. Musser, Superintendent, Operations Support
B. Steele, Manager, Shift Operations
*R. Warden, Manager, Plant Support Nuclear Assessment Section
T. Wilkerson, Manager, Environmental Control
*D. Young, Plant General Manager

Other licensee employees contacted included technicians, operators, engineers, mechanics, security force members, and office personnel.

NRC Personnel:

*W. Orders, Senior Resident Inspector
*M. Shymlock, Branch Chief, Division of Reactor Projects
*J. Zeiler, Resident Inspector

*Attended exit interview

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

2. PLANT STATUS AND ACTIVITIES

a. Operating Status

The unit operated at or near full power for the entire report period.

b. Other NRC Inspections and Meetings

Region II Inspector J. Blake, was on-site during the week of November 13-17, 1995, to conduct an inspection of the maintenance and surveillance areas. Results of this inspection are contained within this report.

Region II Inspector J. Coley, was on-site during the week of November 13-17, 1995, to followup on NRC open items in the

3. OPERATIONS

a. Plant Operations (71707)

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, 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, assess the general condition of plant equipment, and to verify that radiological controls, fire protection controls, physical protection controls, and equipment tagging procedures were properly implemented.

Steam Flow Calorimetric Implementation

During this report period, the licensee changed their method of calculating secondary thermal power from a feedwater flow to a steam flow based calorimetric calculation. The results of this calculation are used to adjust power range instrumentation to match thermal power output. This change was precipitated after a lengthy investigation for the reason why generator megawatt output, as well as RCS loop delta-temperatures and first stage turbine steam pressures, had all slightly decreased over the past several refueling cycles. This indicated that there had been an apparent power loss even though the feedwater flow calorimetric calculation showed the unit was operating at 100 percent. The licensee determined that the cause of this power loss was the result of indicated feedwater flow measurements being lower than actual flow due to venturi fouling. This was confirmed by independent chemical "tracer" testing which measured feedwater flow more accurately. The results of this testing were used to calibrate the steam flow elements so that a steam flow calorimetric could be used to more accurately measure thermal power.

On October 31, the inspectors witnessed and reviewed aspects of the licensee's performance of the new steam flow calorimetric calculation and power increase. This calculation was performed in accordance with revised procedure OST-010, Power Range Calorimetric During Power Operation. The results of this calculation indicated, as expected, that the plant had been

operating approximately 1.5 percent below 100 percent reactor power. Accordingly, reactor power was increased by this amount. The inspectors determined that the activity was well controlled and conservatively executed. A special procedure was developed to control the entire evolution. This procedure provided good operator guidance on expected plant response during the power maneuver and criteria for terminating the evolution should abnormal or unexpected conditions arise. The licensee considered this to be an infrequently performed evolution; therefore, a management representative (Operations Manager) was present during the evolution. The inspectors also noted good coordination and technical guidance was provided by engineering personnel during the evolution.

Based on the information obtained during the inspection, this area/program was adequately implemented.

b. Effectiveness of Licensee Control in Identifying, Resolving, and Preventing Problems (40500)

The inspectors evaluated selected activities of the PNSC to determine whether the onsite review functions were conducted in accordance with TS and other regulatory requirements.

Specifically, the inspectors attended PNSC meetings held on October 27, 31, and November 22, 1995. It was determined that provisions of the TS dealing with membership, review process, frequency, and qualifications were satisfied. Particularly noteworthy was the thorough PNSC review prior to implementing the steam flow calorimetric for calculating secondary thermal power.

Based on the information obtained during the inspection, the area/program was adequately implemented.

c. Followup - Operations (92901)

<u>(Closed) IFI 50-261/93-18-02: Alarm Features Provided By ERFIS Which Can Inadvertently Clear</u>

This followup item involved an incident in which the control room ERFIS printer issued an alarm message that control rod B-10 was misaligned. Later, this alarm cleared, a return to normal message was printed, and a message was printed indicating that the input data for the misaligned rod was "BAD." The licensee determined that a misaligned rod did not actually exist. Instead, incorrect rod position indication data for B-10 was transmitted to the ERFIS computer program that monitors rod position and checks for a misaligned rod (Rod Position Monitoring System).

The licensee determined that the Rod Position Monitoring System program logic was operating as designed. When the rod position input to ERFIS for B-10 exceeded the valid sensor range that a rod could be positioned (between 0 and 253 steps), its value was discarded and the calculation of rod deviation was performed using the remaining inputs. A return to normal message was printed at this time, while the individual rod input for B-10 indicated a quality code of bad. The licensee reviewed other ERFIS applications that perform their calculations in a similar fashion to the Rod Position Monitoring System. These programs included: 1) calculation of axial flux difference (NSAFCK program), 2) comparison of power range detector values (NSPPPM), and, 3) calculation of control rod and shutdown rod bank group averages (NSRPRM). Unlike the Rod Position Monitoring System program, however, these calculations can only proceed if the inputs have "acceptable" quality codes. The inspectors considered this issue to be resolved.

4. MAINTENANCE

a. Maintenance Observation (62703)

The inspectors observed selected maintenance activities on safety-related 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, radiological, and fire prevention controls requirements to determine licensee compliance. The inspectors witnessed and/or reviewed portions of the following maintenance activities:

WR/JO 95-ANKP1	Troubleshooting Control Room Fan Hourly Timer Meter Problem
WR/JO 94-ASCS1	Instrument Air Compressor "A".
WR/JO 95-APGZ1	Overpressure Protection Instrument TM-432G
WR/JO 95-AMLL1	Service Water System (SW) Pump A.
WR/JO 95-APKJ1	Chemical and Volume Control System (CVCS) Charging Pump C.

<u>WR/JO 95-ANKP1:</u> On October 27, the inspectors witnessed I&C technicians troubleshooting the hourly timer meter that tracks operation time associated with the control room ventilation cleanup fans (HVE-19A&B). This meter was found running continuously when neither fan was operating. Troubleshooting activities were conducted in accordance with WR/JO 95-ANKP1. During the activity, the inspectors observed that the technicians did not use procedure MMM-042, Documentation of Temporary Lead Lifts and Jumpers, when a lead to the meter recorder was lifted. This procedure would normally be used for documenting the lifting of leads or the placement of jumpers when those actions were not

controlled by other procedures or controls. This helps ensure that lifted leads/jumpers are properly relanded following work. When questioned about this, the technicians indicated that they had consulted with their supervisor about not using MMM-042 prior to starting work and the supervisor had given his approval because only one lead was involved. The basis for this decision was predicated on the belief that it was improbable that an error could be made in relanding a single lead. In this circumstance, however, the inspectors noted that there were multiple unused terminal connections in the vicinity where the lead had been lifted. While the lead was relanded correctly, this could have posed some confusion in correctly relanding the lead to its proper location. The inspectors considered it improper that the supervisor endorsed the option of not following MMM-042, when the procedure did not provide for this allowance. The inspectors brought this issue to licensee management attention, who indicated agreement that the supervisor had not acted in accordance with their expectations. The supervisor was counseled regarding his actions, and management expectations that MMM-042 be used regardless of the number of leads/jumpers was emphasized with the other I&C supervisors.

Since the meter troubleshooting did not involve safety-related activity, and no actual mis-wiring occurred, the inspectors considered the licensee's corrective action for this issue was adequate.

WR/JO 94-ASCS1: This work request was initiated to overhaul the "A" Instrument Air Compressor. The inspector observed portions of the disassembly, cleaning, rebuilding and reinstallation of the compressor.

WR/JO 95-APGZ1: This work request was initiated as a result of an indicated change in an over-pressure/delta-temperature protection setpoint. The inspectors witnessed troubleshooting activities which diagnosed that over-pressure protection, Hagan module No. TM-432G, had one or more bad capacitors. The circuit board was taken to the I&C shop, where a technician replaced all seven capacitors on the board rather than try to diagnose which of the capacitors was causing the problem. The inspectors noted that all of the existing capacitors had 1983, 1984, or 1985 manufacturing dates. The inspectors were told that the decision to replace all capacitors was based on the knowledge that when one capacitor in a circuit showed signs of age-related failure, it would be only a matter of time before others of the same relative age started to deteriorate.

The inspectors witnessed a technician replacing the capacitors on the circuit board. The inspectors noted that the technician did not rely solely on doing a one-for-one replacement of what was in

place on the circuit board, rather, as he did the replacement, the technician referred to the technical manual and determined that the existing and replacement capacitors were the proper size and polarity as described on the circuit drawing. After each verification step, the technician carefully unsoldered the connections for an existing capacitor and then soldered the new capacitor into place.

When the repair technician had completed the replacement of the capacitors, he asked another technician to check his work. The verifying technician performed a visual inspection of the solder connections for the replacement capacitors, but did not refer to the technical manual to verify that the capacitors were the proper size and were installed with the proper polarity. The less-than-thorough "peer review" was discussed with maintenance management as a potential weakness. The inspectors took this approach because there had been a very recent occurrence (see details in last paragraph of this section) in which an I&C Technician, performing a one-for-one change out of similar capacitors, installed one backwards (wrong polarity). This recent event should have been fresh on the minds of the I&C Technicians, and should have resulted in an across the board improvement in the rigor of these reviews.

WR/JO 95-AMLL1: This work request was initiated after the quarterly IST surveillance on Service Water Pump "A" determined that pump flow had decreased into the alert range. The work order called for taking the pump out of service, adjusting the clearance between the pump impeller and the pump casing, and then re-running the quarterly surveillance test.

The inspectors reviewed the work instructions in WR/JO 95-AMLL1, and the appropriate sections of Corrective Maintenance Procedures CM-010, "Service Water Pump Overhaul," and CM-704, "Service Water Pump Motor Maintenance," which were referenced by the work request.

The job was originally scheduled to be done by November 15, 1995, but was put on hold when a question was raised about the fact that the plant Technical Specification contains a requirement that when one Service Water Pump is inoperable, the other three Service Water Pumps have to be in continuous operation. The contention was that the IST surveillance test was specified as the post-maintenance test to determine operability, and conduct of that test requires that one of the other three Service Water Pumps be taken off line.

The licensee decided that for future consideration, a Technical Specification Amendment would be requested to change the requirement from "continuous operation" to "operable" for the

other Service Water Pumps when one is declared inoperable. The licensee initiated development of a post-maintenance test to confirm operability of the repaired pump, prior to shutting down one of the running pumps for the surveillance test required by the IST program.

WR/JO 95-APKJ1: This work request was initiated when an operator noted a fine spray of water coming from an apparent, pinhole leak in the plunger block section, of Charging Pump "C". (The pump technical manual refers to this section of the pump as the "fluid cylinder".) The pump is a reciprocating charging pump, Model TX-150, manufactured by the Union Pump Company. The licensee had a spare charging pump "fluid cylinder," as well as other required replacement parts, on hand in the warehouse, so repairs were started on the same day that the pump was found to be defective.

While there are no action statements in the Robinson Technical Specification for operability of the charging pumps, the licensee considered the operability of the pump important enough to warrant working around the clock to complete the repair. (The licensee also elected to use this maintenance activity as an opportunity to replace the schedule 10 piping on the suction side of the "C" pump with schedule 40 piping.)

The work request instructions for this job provided details for the removal and installation of the fluid cylinder connections to the pump frame and the suction and discharge piping flanges. Details for the remaining steps in the disassembly and reassembly of the pump were provided by referencing corrective maintenance procedures: CM-034, "Charging Pump Stuffing Box Maintenance" and CM-035, "Charging Pump Maintenance Valve Disassembly and Reassembly."

The inspectors witnessed various activities during the replacement of the charging pump fluid cylinder. The activities witnessed or reviewed in detail included the following:

1) preparation of the detailed work procedure by selecting the appropriate steps from maintenance procedures CM-034 and CM-035, and staging of the required tools and replacement parts,

2) partial disassembly of the pump,

3) installation of the replacement fluid cylinder; alignment and installation of the pump plungers; assembly of and torquing of the stuffing boxes; assembly of and torquing of the cylinder heads; and welding of the suction piping, and,

4) post-maintenance testing.

During the alignment of the pump plungers, one of the plungers was not properly supported at all times, resulting in an alignment dowel pin breaking. When the broken dowel pin could not be extracted from the crosshead stub, a special washer was manufactured and tack welded to the broken dowel pin in order to have something to grasp while they removed it from the crosshead stub. While this caused a delay of a few hours in the job, it was successfully accomplished without additional damage to the pump, and a replacement alignment dowel was installed. The broken alignment pin occurred in the middle of the 12-hour back shift.

When the inspectors witnessed the assembly and torquing of the stuffing boxes and the cylinder heads it was noted that the mechanics carefully torqued the fasteners in an incremental sequence. It was also noted that the Q.C. Inspector observed the entire operation and specifically witnessed the final torquing passes.

With exception of the improper usage of the temporary lead lifting procedure, less-than-thorough "peer review" of the capacitor replacement work, and minor problem with the broken alignment dowel pin during the repair of the "C" Charging pump, the maintenance activities observed appeared to be well-planned and conscientiously executed.

Troubleshooting Associated with Loop 2 OTDT Drift

On October 29 and then again on November 5, 1995, the Loop 2 OTDT temperature indicator (TI-422C) drifted upscale beyond its acceptable tolerance. Each time, operations appropriately declared the channel inoperable, and TS 3.0 was entered briefly until the channel could be placed in the tripped condition. Troubleshooting by I&C personnel for the October 29 failure identified a problem with the lead-lag Hagan module (TM-422C) associated with TI-422C. This module was replaced, tested, and the channel was subsequently returned to service. Troubleshooting of the November 5 failure indicated that the summator (TM-422F) was over-loading the output of the lead/lag unit, making it appear that the lead/lag unit was not operating properly. I&C replaced the capacitors in the TM-422F module and following successful testing, returned the loop to service. On November 8, during further investigation to determine the cause of the repeat failures on Loop 2 OTDT, it was discovered that one of the electrolytic capacitors had been replaced with the reverse polarity (backwards) on module TM-422F during the November 5 work. At the end of this report period, the licensee's investigation of the repeat failure with Loop 2 OTDT was still ongoing. The licensee planned to include the results of this investigation as part of their LER submittal for this event.

The inspectors reviewed the circumstances leading to the incorrect capacitor replacement and the licensee's controls for performing Hagan module refurbishment. This included a review of WR/JO 95-ANNH1 that controlled the work activity, discussions with I&C personnel who performed the work, and, discussions with engineering personnel responsible for the reactor protection system process instrumentation. The inspectors noted that there was loose control over the Hagan module refurbishment activity which could have resulted in this error. Hagan module refurbishment is routinely performed in-house by I&C personnel. However, this activity is not performed using procedural guidance nor independent verification (i.e., quality checks) to ensure that correct replacement components are installed and in the proper configuration. While Hagan module wiring drawings exist, there appears to be no requirement that they be referenced for correct capacitor replacement and polarity. Based on discussions with the I&C technician involved with the November 5 troubleshooting, the capacitors had been replaced based on the existing size and polarity of the original. While it was not clear whether the capacitor was improperly positioned during this activity, it was evident that it was erroneously positioned at some time during module refurbishment activity.

The failure of the licensee to ensure that Hagan module refurbishment was performed adequately is a violation of 10 CFR 50, Appendix B, Criterion II, Quality Assurance Program, which requires that the quality assurance program provide control over activities affecting quality of structures, systems, and components commensurate with their importance to safety. The refurbishment program is required to take into account the need for special controls, procedures, and the need for verification of quality by inspection or test. At the November 22 PNSC meeting, the licensee initiated an action item to develop controls for ensuring that Hagan module refurbishment is properly conducted. This licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII of the NRC Enforcement Policy and is identified as NCV 50-261/95-29-01: Inadequate Program for Hagan Module Refurbishment.

b. Surveillance Observation (61726)

The inspectors evaluated certain safety-related 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, the 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 that the tests conformed to TS requirements. Upon test completion, the inspectors verified that recorded test data was complete, accurate, and met TS requirements, test discrepancies were properly documented and rectified, and that the systems were properly returned to service. Specifically, the inspectors witnessed and/or reviewed portions of the following test activities:

OST-302	Service Water System Component Test
OST-401	Emergency Diesel Slow Speed Start

As a part of the review of maintenance WR/JO 95-AMLL1 indicated in paragraph 4.a., the inspectors reviewed past data from the surveillance testing of all of the Service Water Pumps. The details of the pump tests were reviewed for the past six quarterly tests to determine if a degradation pattern was evident from the test data. The inspectors determined that there were no obvious problems with the test records, but did determine that the tests on these pumps, in the system configuration at Robinson is a complex surveillance.

This area/program was adequately implemented.

c. Followup - Maintenance (92902)

<u>(Closed) VIO 50-261/93-18-04: Failure to Follow Procedures Resulting in Unauthorized Maintenance</u>

This issue involved the licensee's failure to control maintenance activities on one of the control room doors which rendered the associated door, as well as the control room ventilation system inoperable. This maintenance activity, which affected safety-related equipment was initiated without Shift Supervisor permission as required by plant procedure PLP-013, Maintenance Program.

The licensee responded to this violation by letter dated October 11, 1993. The root cause was attributed to personnel performing work outside the scope of the work order controlling the activity. The inspectors reviewed corrective actions described in CR 95-0131, which addressed this issue. Corrective actions included: 1) review of the event and lessons learned with all operations shift personnel, 2) review of the event with all I&C and mechanical maintenance personnel to ensure their understanding of doors affecting the operability of the control room ventilation system, and reemphasizing that work will be performed only in accordance with work order instructions, and, 3) signs were erected identifying which doors are Control Room HVAC barriers and contained statements that the Shift Supervisor should be contacted prior to starting any maintenance. The inspectors

verified that these corrective actions were completed. This violation is closed.

(Closed) VIO 50-261/94-03-02: Failure to Employ Adequate Debris Intrusion Control Measures

On November 15, 1993, inadequate debris intrusion control measures were used during paint stripping efforts on the Emergency Diesel Generator A room floor. Steel shot, from a paint removing machine, were introduced into Emergency Diesel Generator A as well as its associated generator control and current transformer cubicles.

The inspectors examined the licensee's corrective actions as delineated in their response dated March 28, 1994, and concluded that the actions taken were sufficient to prevent the recurrence of this discrepancy. The following actions had been taken; (1) Painting removal operations in the power block are now only accomplished with a specific work request which is reviewed to insure that plant equipment is protected from paint removal operations, and appropriate post maintenance inspection is identified by the work control group, (2) procedure MMM-039, Control of Protective Coating Application, was revised to prohibit the use of steel shot blasting for any surface preparation, (3) the shot blaster which created the discrepant condition was inventoried, and (4) other CP&L facilities were notified of the situation at Robinson and of the potential problems with the use of steel shot type equipment around high voltage equipment. This issue is closed.

(Closed) VIO 50-261/94-03-03: Failure to Post Response to Radiological Working Conditions Violation

On January 5, 1994, an inspector observed that the licensee's response to violations 50-261/93-26-01 and 93-26-03 which involved radiological working conditions had been dispatched on December 29, 1993, but had not been posted as required.

The inspectors examined the licensee's corrective actions delineated in their response dated March 28, 1994. In addition, the inspectors verified current posting on 2 of 3 plant posting boards and that training was given to the individual involved. In addition, procedure RP-008, Rev. 0, was reviewed to insure that adequate requirements for assigning posting responsibilities had been put in placed. The inspectors concluded that actions taken by the licensee were sufficient to correct the discrepancies identified and to prevent their recurrence. This item is closed.

(Closed) IFI 50-261/94-10-01: Perform Video Inspection of Steam Generator Secondary Side for Loose Parts

During the 1994 spring outage of Unit 2, backgouge slag material was found in Steam Generator No. C. The slag material apparently entered the steam generator during the 1984 tube bundle change out. Since all three steam generators had their tube bundles replaced in 1984, the inspector was concerned that this extraneous material may also be in Steam Generators A & B. The licensee intended to open and examine Steam Generators A & B in the 1995 Refueling Outage. The inspector opened this followup item to insure that visual inspections were conducted for foreign material during the 1995 vessel entry.

During this inspection the inspectors verified that the licensee did in fact conduct visual inspections of all three steam generators in the 1995 Refueling Outage (RFO-16). Several small pieces of extraneous material were successfully retrieved from Steam Generators A & C as a result of these inspections. This item is closed.

(Closed) VIO 50-261/94-08-01: Incorrect Radiation Monitor Setpoints

On March 14, 1995, three radiation monitor setpoints were improperly established following the termination of a continuous containment vessel purge. As a result, a non-conservative setpoint existed for approximately two hours on radiation monitor R-14C, Plant Stack, Noble Gas Radiation Monitor.

The inspectors verified the licensee's corrective actions as delineated in their response dated May 27, 1994, had been implemented. The licensee's response also emphasized that, although the R-14C setpoint was set non-conservatively relative to the procedural required setpoint for a period of two hours, the Radiation Monitoring System would have alarmed at all times prior to 10CFR 20 release limits being exceeded. This item is closed.

(Closed) VIO 50-261/94-08-02: Inadequate Corrective Action to Preclude Repetitive Entry into a High Radiation Area Without a Survey Meter, and Inadequate Corrective Action to Preclude Recurring Diesel Engine Failure

The inspectors held discussions with cognizant plant personnel, reviewed revised procedures, and reviewed other applicable documents in order to verify that the corrective actions delineated in their response dated May 27, 1994, were implemented satisfactory. Both items discussed in this violation were examined and the corrective actions taken by the licensee were found to be satisfactory to prevent their recurrence. Therefore, this violation is closed.

(Closed) VIO 50-261/94-15-02: Inadvertent Draining of Safety Injection Accumulator "A"

On April 30, 1994, Operating Procedure OP-202 was improperly implemented during efforts to drain safety injection accumulator B in that the drain valve for accumulator A was opened. As a result, safety injection accumulator A was inadvertently drained below the minimum TS level. Corrective actions taken by the licensee and delineated in their response dated July 25, 1994, were examined by the inspectors and found to be adequate to prevent their recurrence. This item is closed.

(Closed) VIO 50-261/94-12-01: Fire Door Blocked Open Without Declaring Door Inoperable

This violation reported that the licensee failed to take adequate corrective actions on December 23, 1992, in which an automatic door which serves as a fire barrier, was erroneously blocked open and the same door was again erroneously blocked open on April 14, 1994.

The inspectors reviewed the licensee's corrective action delineated in their response dated June 23, 1994. The inspectors found corrective actions taken by the licensee to prevent recurrence of this discrepancy were inadequate. This was based on the fact that three more occurrences of fire door blockage were reported during the 1995 Refueling Outage. A subsequent violation (50-261/95-21-03) was issued for one of these occurrences and was documented in NRC Inspection Report 50-261/95-21. Investigation conducted by the licensee in response to the 1995 violation revealed that, although licensee personnel received training on fire door requirements, contractors did not. Therefore, when the 1995 outage started, occurrences of fire door blockage by contractors were reported. In order to correct this discrepancy the licensee has revised the plant specific employee's training plan for all new employees to include fire door restrictions. The inspectors examined the licensee's corrective actions for both the 1994 and the 1995 violations and considered these corrective actions to be adequate when evaluated collectively. Therefore, this violation will be closed based on the additional corrective actions taken for violation 50-261/95-21-03.

(Closed) VIO 50-261/95-21-03: Fire Door Blocked Open Contrary to the Requirements of FP-014

Contrary to procedure FP-014, on May 26, 1995, the fire door to the pipe alley was blocked open for approximately 30 minutes without notification of operations personnel.

Contrary to procedure FP-014, on May 26, 1995, the fire door to the pipe alley was blocked open for approximately 30 minutes without notification of operations personnel.

The inspector examined the corrective actions taken by the licensee in their response dated September 11, 1995, and considered the corrective actions taken for the reported discrepancies to now be adequate to prevent their recurrence. This item is closed.

One NCV was identified in this area. Based on the information obtained during the inspection, the area/program was adequately implemented.

5. ENGINEERING

Onsite Engineering (37551)

Spent Fuel Pool Heat Load Design Assumptions

During this report period, the inspectors reviewed the licensee's heat load design assumptions for the SFP relative to current refueling/operating practices. This review was conducted due to concerns raised at other plants regarding the adequacy of the SFP cooling system capability to handle full core off-loads as opposed to original design assumptions involving only one-third core off-loads.

The inspectors reviewed UFSAR Sections 9.1.2, Spent Fuel Storage, and 9.1.3, Spent Fuel Pool Cooling and Cleanup System. The licensee's spent fuel pool cooling capacity design assumes both a normal heat load and a maximum heat load case. The normal case involved the off-load of one-third core and the maximum heat load case involved a full core off-load. Heat balances for the full core off-load case show the maximum SFP water temperature will not exceed 166°F. Therefore, as long as the initial SFP temperature remains below this value, there is adequate SFP cooling capacity. In order to prevent reaching 166°F, the UFSAR specifies that the rate of fuel movement into the SFP will be regulated to maintain the SFP temperature at or below 150°F. The TSs also provides requirements for ensuring that SFP temperature does not exceed 150°F. For example, TS 3.8.1.h specifies that fuel movement shall not begin until 100 hours following shutdown. Also, TS 3.8.3 requires monitoring of the SFP temperature, and if 150°F is exceeded during fuel movement to the SFP, then fuel bundles shall be returned to the reactor vessel until temperature goes below 150°F. The inspectors reviewed licensee procedures that implement these requirements. This included a review of general procedure GP-010, Refueling. GP-010 requires that SFP temperature be logged once per shift when SFP temperature is below 125°F, and once per hour when SFP temperature is greater than 125°F. In accordance with TS 3.8.3, GP-010 directs fuel to be returned to reactor vessel if temperature exceeds 150°F. The inspectors also reviewed

During this review, the inspectors noted several inaccuracies in the UFSAR description of the SFP cooling design. For example, the UFSAR specifies in Section 9.1.3.1.2, Cooling Capacity, that the Design Basis of the cooling capacity was to provide cooling for a full core off-load when one-third core already occupies the SFP. However, the inspectors noted that the licensee routinely conducts full core off-loads with greater than one-third core (54 assemblies) already in the core. In order to resolve this, the inspectors reviewed CP&L Design Calculation RNP-M/MECH-1590, dated November 28, 1994. This calculation showed that for SFP temperatures up to 166°F, the cooling design capability could remove the heat on a continuous basis for a full spent fuel pool of highest credible heat assemblies. In addition, the inspectors reviewed TS Amendment No. 69, dated June 8, 1982, which revised the TS to enlarge the capacity of the spent fuel pool from 276 fuel assemblies to its current maximum of 544. The NRC Safety Evaluation associated with this amendment addressed the cooling design capability assuming the maximum number of assemblies (544) stored in the SFP. The inspectors considered these to be wording discrepancies with the UFSAR and not problems with the SFP cooling design. Other inaccuracies included statements regarding the times to pool boiling for one-third and full core off-loads. These times had decreased due to the increase in number of assemblies being stored in the SFP. The licensee initiated CR 95-02501 to correct the wording in the UFSAR to reflect the true design of the SFP cooling system. This was considered acceptable to correct this problem.

The inspectors concluded that there was adequate SFP cooling capacity and administrative controls implemented to ensure that the SFP temperature is maintained below its design value.

Control Room Emergency Ventilation Humidity Controls

The inspectors reviewed the licensee's control room emergency ventilation system relative to its design for limiting relative humidity of the air circulating through its charcoal filters. This review was conducted due to concerns raised at another nuclear plant where the control room humidistat heater controls were found inoperable. The humidistat is designed to actuate heaters which limit intake humidity, normally, to less than 70 percent. Reducing the relative humidity to less than 70 percent ensures that the charcoal filters can adequately remove radioactive iodine from the control room during accident conditions. At the other nuclear plant, it was determined that these heater controls had not been included in the plant's surveillance testing or preventative maintenance program and as such, were not periodically verified to function properly.

The inspectors reviewed UFSAR Section 6.4, Habitability Systems, 9.4.2, Control Room Air Conditioning System, and, CP&L Calculation No. 82-226-M-02-F, which documented the control room ventilation system design and cooling load. The inspectors noted that the control room ventilation

system is not equipped with heaters to limit intake humidity of the air admitted into the carbon filters. The humidity of the air entering the filters is kept below 70 percent by limiting the amount of outside air makeup. During this review, the inspectors noted that the design outside air temperatures used to determine the relative humidity of the makeup air was 95 degrees dry bulb and 78 degrees wet bulb. At this condition, the relative humidity is only 48 percent. The inspectors had concerns that this was not representative of worst case outside environment relative humidity conditions. In response to this, licensee engineering personnel performed subsequent calculations using more representative values of outside relative humidity. The inspectors reviewed these results which showed that the relative humidity entering the carbon filters (after mixing with control room recirculation air) would still remain below 70 percent.

The inspectors noted that the charcoal filter is also equipped with a humidity sensor that alarms if relative humidity exceeds 70 percent. The licensee indicated that the humidity alarm was tested during each refueling outage. The inspectors reviewed WR/JO 95FVV007 and 95-AGBB1, completed May 1995, which documented the last time that this alarm was calibrated.

Based on these reviews, the inspectors determined that the control room ventilation system was adequately designed and maintained to ensure that air entering the carbon filters remains below 70 percent.

Based on the information obtained during the inspection, the area/program was adequately implemented.

6. PLANT SUPPORT (NRC Inspection Procedures 71707 and 71750)

Throughout the inspection period, facility tours were conducted to observe personnel activities as they relate to radiation protection and security. The tours included entries into the protected areas and the radiologically controlled areas of the plant and included assessment of radiological postings and work practices. During these inspections, discussions were held with radiation protection and security personnel. The inspections confirmed the licensee's compliance with 10 CFR, Technical Specifications, License Conditions, and Administrative Procedures.

Based on the information obtained during the inspection, the area/program was adequately implemented.

7. EXIT INTERVIEW

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on November 29, 1995. During this meeting, the inspectors summarized the scope and findings of the inspection as they are detailed in this report. 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	STATUS	Description/Reference Paragraph
IFI 93-18-02	Closed	Alarm Features Provided By ERFIS Which Can Inadvertently Clear (paragraph 3.c).
NCV 95-29-01	Closed	Inadequate Program for Hagan Module Refurbishment (paragraph 4.a).
VIO 93-18-04	Closed	Failure to Follow Procedures Resulting in Unauthorized Maintenance (paragraph 4.c).
VIO 94-03-02	Closed	Failure to Employ Adequate Debris Intrusion Control Measures (paragraph 4.c).
VIO 94-03-03	Closed	Failure to Post Response to Radiological Working Conditions Violation (paragraph 4.c).
IFI 94-10-01	Closed	Perform Video Inspection of Steam Generator Secondary Side for Loose Parts (paragraph 4.c).
VIO 94-08-01	Closed	Incorrect Radiation Monitor Setpoints (paragraph 4.c).
VIO 94-08-02	Closed	Inadequate Corrective Action to Preclude Repetitive Entry into a High Radiation Area a Survey Meter, and Inadequate Corrective Action to Preclude Recurring Diesel Engine Failure (paragraph 4.c).
VIO 94-15-02	Closed	Inadvertent Draining of Safety Injection Accumulator "A" (paragraph 4.c).
VIO 94-12-01	Closed	Fire Door Blocked Open Without Declaring Door Inoperable (paragraph 4.c).
VIO 95-21-03	Closed	Fire Door Blocked Open Contrary to the Requirements of FP-014 (paragraph 4.c).

8. ACRONYMS AND INITIALISMS

CR Condition Report
ERFIS Emergency Response Facility Information System

GP	General Procedure
gpm	gallons per minute
HVAC	Heating, Ventilation, and Air Conditioning
I&C	Instrumentation and Control
IFI	Inspector Followup Item
IST	Inservice Test
LER	Licensee Event Report
MMM	Maintenance Management Procedure
NCV	Non-Cited Violation
OST	Operation Surveillance Test
OTDT	Over-Temperature Delta-Temperature
PLP	Plant Program Procedure
PNSC	Plant Nuclear Safety Committee
SFP	Spent Fuel Pool
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
VIO	Violation
WR/JO	Work Request/Job Order