

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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Report No: 50-261/96-10

Licensee: Carolina Power & Light (CP&L)

Facility: H. B. Robinson Unit 2

Location: 2112 Old Camden Rd.
Hartsville, SC 29550

Dates: July 7 - August 17, 1996

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Enclosure 2

EXECUTIVE SUMMARY

H. B. Robinson Power Plant, Unit 2 NRC Inspection Report 50-261/96-10

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a six-week period of resident inspection; in addition, it includes the results of an engineering inspection by two Region II inspectors and inspection of aspects of the licensee's spent fuel shipment program by three Region II inspectors.

Operations

- The licensee's preparations for Hurricane Bertha were prompt and thorough. Good monitoring and assessment of potentially changing weather conditions were performed during the period (Section 01.2).
- The inspectors determined that the downpower evolution to replace a leaking upper bearing oil cooler to the A Heater Drain Pump was well planned and coordinated (Section 01.3).
- The inspectors concluded that with the exception of a minor Foreign Material Exclusion Area (FMEA) poor practice, the FMEA controls associated with spent fuel pool shuffling activities observed were adequate (Section 01.4).
- Based on review of the draft 1996 Institute of Nuclear Power Operations annual assessment of site activities, issues identified were consistent with NRC perceptions of licensee performance (Section 08.1).

Maintenance

- The procedures used for the operation, inspection, and maintenance of the spent fuel shipping casks and cranes were adequate in providing the details for conducting work activities. In general, the craft, technicians, and operators were knowledgeable and skillful in performing their assigned activities; however, a control problem was identified with ensuring that personnel protection measures were established along the lift path (Section M1.1).
- Maintenance activities associated with the B charging pump packing replacement were properly performed (Section M1.2).
- Routine surveillance test activities were well coordinated and adequately performed (Section M1.3).

Engineering

- The licensee's design change control process was judged to be adequate and the modification packages reviewed were of good quality (Section E1.1 and E1.2).
- Progress on Robinson Engineering Support Section (RESS) backlog reduction was noted (Section E6.1).
- Self assessments performed by RESS were effective in identifying engineering performance deficiencies and were useful in providing oversight to management (Section E7.1).
- A Violation was identified involving the licensee's failure to take adequate corrective actions after it was identified in May 1995 that the design pressure rating was exceeded for fourteen safety related solenoid operated valves. This resulted in the design application deficiencies remaining unanalyzed until May 1996 (Section E8.1).

Plant Support

- The inspectors concluded effective procedures were implemented to safely control irradiated fuel shipment activities. Minor spent fuel cask handling procedure discrepancies identified were appropriately resolved by the licensee. A Nuclear Assessment Section (NAS) assessment of the spent fuel shipment program readiness was thorough and probing. NAS assessment and table top exercise weaknesses were properly resolved and effective program enhancements were implemented prior to conducting shipment activities. The inspectors observed that adequate controls were implemented during the August 12, 1996, spent fuel shipment (Section R1.2).
- A Non-Cited Violation was identified for the failure to affix a radiation material label on a spent fuel shipping cask container that was located in the Radiation Control Area (RCA) (Section R1.3).
- A Violation was identified for the failure to provide minimum illumination for several areas of the protected area (Section S1.1).

Report Details

Summary of Plant Status

Unit 2 remained at power during the entire inspection period completing 408 days of continuous operation. On July 9, a downpower to 82 percent was conducted to replace the upper bearing oil cooler to the A Heater Drain Pump after a leak was discovered. On August 7 and again on August 8, power was reduced to 60 percent after the Heater Drain Pumps tripped unexpectedly. The unit was returned to 100 percent power on August 9 and remained at full power for the remainder of the report period.

I. Operations

01 Conduct of Operations

01.1 General Comments (71707)

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness and communications, and adherence to approved procedures. The inspectors attended daily operations turnover, management review, and plan-of-the-day meetings to maintain awareness of overall plant operations. Operator logs were reviewed to verify operational safety and compliance with Technical Specifications (TSs). Instrumentation, computer indications, and safety system lineups were periodically reviewed from the Control Room to assess operability. Frequent plant tours were conducted to observe equipment status and housekeeping. Condition Reports (CRs) were routinely reviewed to assure that potential safety concerns and equipment problems were reported and resolved.

In general, the conduct of operations was professional and safety-conscious. Good plant equipment material conditions and housekeeping was noted throughout the report period. Specific events and noteworthy observations are detailed in the sections below.

01.2 Preparations for Hurricane Bertha

a. Inspection Scope (71707, 71750)

Between July 10-12, the inspectors reviewed licensee preparations in response for Hurricane Bertha. This included a review of Operations Management Manual (OMM) procedure OMM-021, Operation During Adverse Weather Conditions, Rev. 13, and verification that the actions prescribed by the procedure were properly implemented.

b. Observations and Findings

On July 10, at 11:30 a.m., the licensee began preparations for the possible impact from Hurricane Bertha. At the time, the hurricane was still several days away but was heading toward the site. The licensee initiated actions for a hurricane warning in accordance with OMM-021. The inspectors reviewed the procedure and verified that applicable actions were being completed. This verification also included several walkdowns of the site to ensure that loose items were properly stored or secured. Only minor items were identified and discussed with licensee management.

Based on weather projections that hurricane force winds would not be expected near the site, licensee management decided that a plant shutdown was not necessary. On July 12, the hurricane passed within approximately 150 miles to the east, traveling from south to north. Maximum sustained winds of approximately 25-30 mph were observed at the site. No significant damage occurred onsite. Offsite power was maintained throughout the storm as well as normal communications.

c. Conclusions

The inspectors concluded that the licensee's readiness for the Hurricane's arrival was prompt and thorough. The licensee continuously monitored the progress and status of the hurricane and was sensitive to the potential for changing weather conditions that could occur at the site.

01.3 Downpower to Repair Heater Drain Pump Oil Cooler Leak

a. Inspection Scope (71707)

On July 9, the licensee conducted a downpower to 82 percent in order to replace the oil cooler to the A Heater Drain Pump (HDP). The inspectors reviewed the licensee's activities associated with preparations and conduct of the downpower evolution.

b. Observations and Findings

On July 9, the licensee discovered that service water was leaking into the upper bearing oil cooler to the A HDP. While no appreciable increase in bearing temperature was observed at the time, the licensee decided to replace the oil cooler. These activities involved reducing power to 82 percent, stopping the A HDP, replacing the oil cooler, and returning to full power operation. Prior to the downpower, operations management issued a Night Order which described the scope of the activities and provided operator guidance on

maneuvering reactor power. Reactor engineering personnel determined that xenon would not be a concern due to the limited power decrease. Nonetheless, they provided Operations personnel with power maneuvering rates to lessen the impact of the transient on core reactivity. The inspectors verified that a pre-job briefing was held with operations, engineering, and maintenance personnel to discuss details of the evolution, precautions, and contingencies for potential problems. The downpower commenced at 10:00 p.m. on July 9. Following replacement of the oil cooler, the unit was returned to full power at 3:40 a.m. on July 11 without incident.

c. Conclusions

The inspectors determined that the downpower evolution was well planned and coordinated. No discrepancies were identified.

01.4 Foreign Material Exclusion Discrepancies

a. Inspection Scope (71707)

On July 18, the inspectors observed foreign material exclusion area (FMEA) activities in the area of the spent fuel pool. The licensee was in the process of shuffling spent fuel in the spent fuel racks in preparation for an upcoming shipment to the Shearon Harris Nuclear plant. The inspectors reviewed the FMEA procedure, and the material and personnel equipment logs.

b. Observations and Findings

The inspectors observed some minor inconsistencies involving a Radiation Control (RC) Technician in the foreign material exclusion area around the spent fuel pool. The FMEA boundary was setup around three sides of the spent fuel pool with a single access control point. A swinging gate was located at the far end of the FMEA and was labeled as an emergency exit. The inspectors observed an RC technician enter and exit the FMEA three times using the emergency exit. The RC technician removed items from the FMEA through the Access Control Point and reentered the FMEA with the items through the emergency exit. These items were not logged out and into the FMEA. While this demonstrated weak FMEA controls, the inspectors observed no foreign material event.

The inspectors discussed their observations with the licensee. The licensee counselled the RC technician, and indicated that the FMEA program would be reassessed.

c. Conclusions

The inspectors concluded that with the exception of a minor FMEA poor practices, the FMEA controls associated with spent fuel pool shuffling activities observed were adequate.

08 Miscellaneous Operations Issues

08.1 Institute of Nuclear Power Operations (INPO) Assessment

a. Inspection Scope (71707)

The inspectors reviewed the second draft of the INPO annual assessment of site activities conducted in April 1996.

b. Observations and Findings

The inspectors found that issues identified were consistent with the NRC perceptions of licensee performance. No safety significant issues that required immediate attention were identified.

c. Conclusions

No regional followup of the INPO identified issues is planned.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Observation of Spent Fuel Cask Lifting Operations

a. Inspection Scope (60855)

The inspectors observed portions of spent fuel cask lifting and drying process activities to verify that the activities were performed in accordance with the applicable procedures and American National Standards Institute (ANSI) Codes. The procedures and ANSI Codes used are listed below:

- Procedure MMM-009, Operation, Testing, and Inspection of Cranes and Material Handling Equipment, Rev. 20,
- Training Procedure, Crane Operator, Rev. 15,
- Procedure SFS-001, IF-300 Shipping Cask Operations, Rev. 13,

- Procedure SFS-004, Spent Fuel Cask Crane Restricted Mode Procedure, Rev.9, and,
- ANSI B30.2, Overhead and Gantry Cranes.

b. Observation and Findings

The inspectors observed portions of spent fuel cask operations in preparation for cask shipment of the Shearon Harris Nuclear Plant. The IF-300 cask used for this shipment can handle seven assemblies with a total weight for the fuel and cask of approximately 68 tons. One of the two casks used for this shipment had initially been lifted, installed at one end of the spent fuel pool, and loaded with seven assemblies prior to the inspectors' arrival onsite. Since the cask location was at the end of the spent fuel pool next to the yoke storage and decontamination pits, the lifting and movement of the cask from the spent fuel pool to the decontamination pit would not go over any adjacent spent fuel assemblies.

The inspectors observed the following activities:

- Daily morning briefing at 6:00 a.m. on August 6 and 7,
- The preparation and movement of the cask closure head from the decontamination pit to the top of the cask stored in the spent fuel pool,
- The connection engagement for the primary yoke to trunnions at two sides of the cask and the secondary yoke (redundant purpose) to the bottom of cask,
- The lifting from the pool, the movement of the cask from the spent fuel pool over the yoke storage pit to the decontamination pit, and the unloading in the decontamination pit,
- The demineralized water rinse of wire cables, load block, yokes, etc.,
- The tool and equipment lifting using the auxiliary load block,
- The lifting and movement of load blocks and yokes back to the storage pit,
- The installation of nuts to tighten the closure head,
- The drying process and leak inspection for the cask.

During the observation of cask, yokes, and equipment box movement, the inspectors noticed one problem as discussed below.

The cask was moved over people inside the yoke storage pit as it traveled from the spent fuel pool over the yoke storage pit to the decontamination pit. During this move, the lower signalman walked immediately down from the spent fuel floor to the decontamination pit floor after he directed the crane operator to move the cask from the spent fuel floor, over the yoke storage pit, to the decontamination pit. Because the crane operator could not see people entering the yoke storage pit and the signalman was on the way down to the decontamination pit, the cask inadvertently passed over people inside the yoke storage pit. In addition, the upper signalman was also unable to see into the yoke storage pit at this time. The signalmen did not observe the load path at all time resulting in the cask movement over people. In this instance, the licensee had not sufficiently preplanned this lift to ensure that either the entire lift route was observable by a signalman or operator, or, for those areas not observed, that controls were in place to restrict entry during the lift. The problem was identified as a personnel safety hazard issue and did not affect the actual performance of the cask movement.

The inspectors immediately informed the licensee about this issue. The licensee issued CR 96-01836, "Lifting Heavy Loads", for evaluation.

The inspectors also reviewed data and completed information in the performance copy of Procedure SFS-001 and records of crane operator training, certification, recertification, and medical data for three crane operators who performed the lift. The annual medical data reviewed included the check on visual acuity, hearing, color vision, and fitness for crane operation.

c. Conclusions

Overall, the cask lift was satisfactory. A control problem was identified with ensuring that personnel safety measures were established along the lift path.

M1.2 B Charging Pump Packing Replacement

a. Inspection Scope (62703)

On July 18, the inspectors reviewed and witnessed aspects of the packing replacement of the B Charging Pump.

b. Observations and Findings

In early July, the licensee identified that reactor coolant system unidentified leakage had increased. The B Charging Pump was in operation at the time. After swapping charging pumps, the licensee verified that unidentified leakage was reduced back to its normal value, indicating that the increased unidentified leakage was attributed to the B charging pump.

On July 18, the inspectors witnessed aspects of Work Request/Job Order 96-ACLI1 for replacing the packing on the B charging pump. The instructions for performing the packing replacement were contained in Corrective Maintenance (CM) procedure CM-034, Charging Pump Stuffing Box Maintenance, Revision 9. One of the three pump plungers was also replaced as a conservative measure after some minor scoring on the outside surface of the plunger was identified. After completing the work, post-maintenance testing on the pump was performed in accordance with Operations Surveillance Test (OST) procedure OST-101-2, Chemical and Volume Control System (CVCS) Component Test Charging Pump B. The pump was returned to service without any major problems later that day. No discrepancies were identified.

c. Conclusions

The inspectors concluded the B charging pump maintenance and testing was performed in accordance with applicable procedures in a conscientious and professional manner.

M1.3 Maintenance Surveillance Observations

a. Inspection Scope (61726)

During the inspection period, the inspectors observed all or portions of various maintenance surveillance activities performed by the licensee. These surveillances were performed to meet the surveillance requirements of applicable sections in TSs. The inspectors verified that approved procedures were available and in use, test equipment in use was calibrated, test prerequisites were met, shift pre-job briefings were performed, TS Limiting Conditions for Operations (LCOs) were entered and adhered to, and testing was accomplished by qualified personnel. Upon test completion, the inspectors verified that test data was complete and met acceptance criteria, and equipment restoration was properly completed. The inspectors observed all or portions of the following surveillances:

- OST-401 Emergency Diesels Slow Speed Start
- EST-124 Response Time Testing of Reactor Coolant System RTDs

b. Observations and Findings

The inspectors determined that the surveillances were performed in accordance with the prescribed procedures. The inspectors reviewed the results of the surveillance tests and verified that test acceptance criteria were satisfied. Pre-job briefings were conducted by operations prior to testing which resulted in good test coordination. The procedures provided detailed precautions and instructions. The inspectors concluded that the tests were properly performed.

c. Conclusions

The inspectors determined that the observed surveillances were well coordinated and controlled in accordance with applicable surveillance test procedures.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Licensee Event Report (LER) 93-015-00, Pressurizer Pressure Transmitters Out of Calibration: This issue involved the repeated inadequate calibration of the three pressurizer pressure transmitters due to personnel error. Personnel performing the calibrations were part of the licensee's outage traveling crew and were not adequately trained and experienced on the use of the calibration equipment, specifically, a dead weight testing apparatus resulting in the wrong weights being used for these transmitters. The licensee's corrective actions for this problem included retraining traveling crew personnel on the use of a dead weight tester and revising training qualifications to include periodic retraining. The inspectors reviewed applicable training records and qualifications and verified that the committed training activities were completed. Since this incident, the inspectors noted that this work is now only performed by site Instrumentation and Control (I&C) personnel. The inspectors verified that training on the use of dead weight testing instrumentation was being provided for site I&C personnel. This item is closed.

M8.2 (Closed) LER 94-003-00, TS Required Shutdown Due to Emergency Diesel Generator Inoperability: This event involved the inoperability of the B Emergency Diesel Generator (EDG) on February 18, 1994, when a locking pin for the modulating air damper came loose and was propelled through the engine's air system damaging the scavenging air blower and turbocharger. The root cause of the damper pin failure was unknown at the time that the LER was written.

The licensee provided a supplement to this LER (261/94-03-02) on November 30, 1994, indicating that the root cause of the failure to be inadequate corrective action for a similar failure of the air intake system associated with the B EDG on February 12, 1994. The corrective actions for this event included enhancements in the investigation procedures for plant events. This issue was also the subject of Violation 50-261/94-08-02. The licensee's corrective actions for this violation were previously reviewed and found to be acceptable. The violation was closed in NRC Inspection Report 50-261/95-29. Supplement 2 of this LER (261/94-03-02) was reviewed and closed in NRC Inspection Report 50-261/96-01. Therefore, based on these previous reviews, this LER is closed.

- M8.3 (Closed) LER 94-011-00, Technical Specification 3.0: Emergency Diesel Generator Inoperability: This LER identified a condition where 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, offsite 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 offsite 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 the other EDG is inoperable. The inspectors reviewed the TS and verified that this change had been incorporated into the TS by Amendment 158. Based on this review, this LER is closed.

- M8.4 (Closed) LER 94-019-01: TS Violation Due to Exceeding Pressurizer Cooldown Rate: This issue involved a condition prohibited by the plant TS. Specifically, that the TS 3.1.2.3. limit for pressurizer heatup and cooldown had been exceeded. Notice Of Violation (NOV) 50-261/94-23-02 was issued for this event on November 28, 1994. The inspectors reviewed the licensee's response to the violation dated December 27, 1994, and corrective actions for LER 94-019-01.

The corrective action for Violation 94-23-02, specified in the licensee's response to the NOV, had been reviewed by the NRC and found to be adequate and properly implemented. The Violation was closed out in NRC Report 50-261/95-30.

The inspectors verified that the corrective action specified in the response to the NOV was the same as that specified in LER 94-019-01. Consequently, LER 94-019-01 is closed out based on the previous review of the implementation of corrective action.

III. Engineering

E1 Conduct of Engineering

E1.1 Design Change Processes

a. Inspection Scope (37550)

The inspectors reviewed the licensee's procedures which control the design change program.

b. Observations and Findings

The inspectors reviewed the revisions of the procedures listed below to verify that design control measures were consistent with 10 CFR 50, Appendix B, Criterion III and 10 CFR 50.59. The following procedures were reviewed:

PLP-032, 10 CFR 50.59 Reviews of Changes, Tests, and Experiments, Rev.7, dated February 20, 1996; PLP-054, Configuration Control, Rev. 6, dated July 17, 1996; PLP-064, Engineering Service Requests, Rev.5, dated July 19, 1996; MOD-022, Administrative Procedure for Engineering Service Request Major Modifications, Rev.4, dated March 16, 1996; MOD-018, Temporary Modifications, Rev. 16, dated January 23, 1996; EGR-NGGC-003, Design Review Requirements, Rev. 0, dated June 3, 1996; EGR-NGGC-0005, Engineering Service Requests, Rev. 1, dated July 29, 1996; and EGR-NGGC-0304, Maintenance of Design Documents, Rev.0, dated November 11, 1995.

The inspectors concluded that the procedures adequately addressed: design input, training, drawing changes, post-modification testing, design verification, control of field changes, 10 CFR 50.59 safety evaluations, and As Low As Reasonably Achievable (ALARA) reviews. The inspectors concluded that adequate controls were in place to ensure effective implementation of design changes. However, the inspectors noted that when the new EGR-NGGC procedures were issued to improve design control activities, previously issued procedures which they were meant to replace were not deleted and/or canceled. For example, EGR-NGGC-005 was issued to replace procedures PLP-064 and MOD-022. The inspectors noted that PLP-064 and MOD-022 were still being maintained current. EGR-NGGC-0005, Engineering Service Requests, streamlined the process for performing engineering work. EGR-NGGC-0005 is 88 pages while procedure PLP-064 is 162 pages. The 162 page procedure is very cumbersome to use. The inspectors discussed with licensee personnel involved in the change to the new procedure the benefits involved in the change. The responsible engineer now has formalized responsibility to track through modifications until completion. This includes

reviewing the work request that installs the modification and reviewing the testing of the modification. The new procedure also contains a matrix that shows which documents are required by the modification and which are optional. Procedure EGR-NGGC-005 also contains checklists to simplify the design process. The EGR-NGGC series of procedures are corporate level procedures being issued to standardize engineering work activities on all three Carolina Power and Light (CP&L) nuclear plants.

c. Conclusions

The inspectors concluded that the licensee's design change control procedures complied with the requirements of 10 CFR 50.59, and 10 CFR 50, Appendix B, Criterion III. However, the inspectors noted that duplicate procedures exist which could possibly result in confusion in the future and could result in potential design errors. This was discussed with the licensee.

E1.2 Review of Design Changes and Modification Packages

a. Inspection Scope (37550)

The inspectors reviewed the design change and modification packages to: 1) determine the adequacy of the safety evaluation screening and the 10 CFR 50.59 safety evaluations; 2) verify that the modifications were reviewed and approved in accordance with Technical Specifications and administrative controls; 3) verify that applicable design bases were included; 4) verify that Updated Final Safety Analysis Report requirements were met; 5) verify that both installation testing and post modification testing requirements were specified so that adequate testing would be accomplished. The inspectors selected major modifications, minor modifications and a temporary modification to review. The only difference between major and minor modifications is cost and engineering involvement.

b. Observations and Findings

The inspectors reviewed the following design change and modification packages:

ESR-9400731	Penetration Protection System (PPS) Design Change Containment Vessel Penetration Repair
ESR-9500327	Dampening Adjustments to Steam Flow Transmitters
ESR-9500633	Main Steam Isolation Valve (MSIV) Manual Control Valve Delete

ESR-9500738	Service Water Header Leak Repair
ESR-9500764	Replacement of End of Qualified Life Environmental Qualification (EQ) Cables
ESR-9500783	Modify HVH-1,2,3,4 to Leave Butterfly Valves Open
ESR-9500782	Resolve Generic Implementing Procedure (GIP) Issues for RFO 17
ESR-9500870	Power Operated Relief Valve (PORV) Block Valve Stem Replacement

The above design change and modification packages were scheduled to be implemented during the next refueling outage, Refueling Outage 17 (RFO 17). The inspectors found that the modification packages had been reviewed and approved in accordance with the licensee's design control procedures and that the format and content of the modification packages was consistent with the design control procedure. The quality of the modification packages was good overall with only a few minor discrepancies being noted in the ESR 9500764 package. These discrepancies included errors in the bill of materials and incomplete instructions pertaining to cable pulling. Cable pulling was addressed by Note 6k on Drawing number HBR2-0B060, Electrical Installation Practices. The note stated that care should be taken to ensure that cables are not over tensioned during cable pulling; however, there were no specific requirements for control of pulling tension or side-wall pressure. Licensee engineers stated that additional instructions would be issued to address these requirements. None of the noted discrepancies would have prevented successful implementation of the modification or resulted in an inadequate modification package. The scope of each modification was found to be consistent with the problem resolution outlined in the Engineering Support Request. The 10 CFR 50.59 Safety Evaluations were found to be adequate. The installation and test instructions were considered adequate to implement the modification and verify that it performed in accordance with design. The inspectors also verified that the UFSAR and other documents e.g. drawings and procedures had been identified in the modification packages for revision.

The modifications reviewed were prepared using procedure PLP-064. Changes to the modifications can be processed using either procedure PLP-064 or EGR-NGGC-005 guidance. The inspectors found that the basic information was contained in the packages but that it varied in content due to the flexibility allowed in procedure PLP-064. Examples included the following: Form 4 which tracked action items was an option

and in some cases was included with the procedure and in other cases it was used in close out to identify open items. Some of the procedures included the ALARA review and others did not but checked the design verification checklist as ALARA completed. The inspectors determined that an ALARA review had been done on these modifications but was not included in the package. The inspectors obtained copies of the ALARA review from radiation protection and learned that it had been accomplished using AP-040, ALARA Planning/ Dose Planning, Rev. 4, dated June 26, 1996. The inspectors did not find the design verification checklist in ESR-9500870; however, further review of this issue disclosed that the licensee used an alternative method to document the design review. The alternative method was conducted in accordance with the procedure.

c. Conclusions

In general, the modification packages were judged to be of good quality and would not degrade plant performance, safety, or reliability. The modification packages contained sufficient specifications, drawings and procedures to be properly installed and tested. The licensee's 10 CFR 50.59 evaluations were completed in accordance with NRC requirements.

E6 Engineering Organization and Administration

E6.1 Engineering Backlog

a. Inspection Scope (37550)

The inspectors reviewed the backlog of open items in the Robinson Engineering Support Section (RESS).

b. Observations and Findings

The backlog of items in the RESS include engineering service requests (ESRs) which include modifications, temporary modifications, drawing changes, other engineering documents with outstanding changes, and other engineering items, including open condition reports and engineering commitments. The licensee's performance report for the week of July 31, 1996, showed approximately 600 open engineering work items. The licensee has recently completed a self-assessment, discussed in paragraph E7, below, regarding management of the engineering backlog. Actions were being planned to address the problems identified during the self-assessment and to continue reduction

of the engineering work backlog. The long term goal was to reduce the total number of open items in RESS to less than 200.

c. Conclusions

The inspectors concluded that the licensee has made progress in identification of the backlog of engineering work in RESS. Progress was being made in reduction of the backlog.

E7 Quality Assurance in Engineering Activities

E7.1 Quality Assurance Assessment and Oversight

a. Inspection Scope (37550 and 37551)

The inspectors reviewed self-assessments performed within the RESS.

b. Observations and Findings

Self-assessments are part of the overall CP&L quality assurance program at Robinson. The self-assessments were performed in accordance with procedure PLP-057, Self-Assessment, Revision 4, dated November 3, 1995. The results of these assessments were categorized as strengths, or findings. The self-assessments reviewed by the inspector were the results from recently completed assessment numbers RESS 96-015, RESS Organization & Administration; and RESS 96-026, Environmental Qualification (EQ) Program at Robinson Nuclear Plant (RNP). Several findings were identified in Assessment 96-026. Six Condition Reports were written to document discrepancies identified in the EQ program; however, none of the problems resulted in identification of any inoperable equipment. The conclusion of the assessment was that the Robinson EQ program meets overall EQ requirements.

The inspectors discussed the results of Assessment 96-015 with the site engineering manager. Several issues were identified regarding management of the engineering backlog. These included overdue action items, work not assigned to individuals or assigned to individuals no longer onsite, discrepancies in the ESR data base, older modifications which require closeout, and failure to include some items in the open engineering work which affect the weekly/monthly engineering performance indicators. The final report for assessment 96-015 had not been completed as of the inspection date; however, CR number 96-01823 was issued and other CRs were being prepared to document and disposition findings.

c. Conclusions

The inspectors concluded that the self-assessments performed by RESS were effective in identifying engineering performance deficiencies and were useful in providing oversight to management. Managers in RESS have been proactive in following up on issues identified at other sites to identify and correct deficiencies in engineering work at RNP.

E7.2 Special UFSAR Review

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR descriptions. While performing the inspection discussed in this report, the inspectors reviewed selected portions of the UFSAR that related to the areas inspected. The inspectors verified that for the select portions of the UFSAR reviewed, the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

E8 Miscellaneous Engineering Issues (37551 and 92903)

E8.1 (Closed) Unresolved Item (URI) 50-261/96-08-01, Review Licensee Investigation and Resolution of Solenoid Valve Discrepancies:

Background

This issue involved the licensee's evaluations and corrective actions to address design problems identified with solenoid valves (SOVs). The design problems were identified after the ASCO 3-way SOV, which controls one of the two containment isolation valves in the Steam Generator A Blowdown sample line, was found to be leaking past its vent port while the SOV was deenergized and closed. Subsequent investigations revealed that the regulated supply air pressure (85 pounds per square inch gauge (psig)) exceeded the SOV's maximum design rating (60 pounds per square inch differential (psid)). This design rating is called the maximum operating pressure differential (MOPD) and corresponds to the rating of the SOV's internal spring force acting to keep the supply air from pressurizing the SOV inlet port. Supplying higher air pressure than the SOV valve is designed for can result in air leaking past its inlet or vent port seats. While leakage past the vent port does not create a significant problem, leakage past the inlet port could prevent or interfere with the closure of the associated air operated valve that the SOV controls. The SOVs for the other five containment isolation valves in the Steam Generator

Blowdown sample lines were also found to be under-rated. All six SOVs in this application were subsequently replaced.

Licensee Investigations

Further investigation by the licensee determined that this MOPD application problem was much broader in scope. SOVs in both safety related and non-safety related applications were affected. In an effort to thoroughly investigate and resolve this problem, engineering initiated an evaluation of the MOPD versus supplied air pressure to all SOVs in the plant with priorities placed on safety related applications. This included evaluation of approximately 850 SOVs. The inspectors verified that as the evaluation progressed, CRs were initiated for MOPD application discrepancies identified. Generally, there were three main areas of MOPD concerns identified by the licensee. These three areas were as follows:

1) MOPD Below Air Regulator Setting:

This area included SOVs where their MOPD was below the setting of the regulator that was installed upstream to limit air pressure to the SOV. In these cases, the SOV would be pressurized above its design rating and leakage could potentially occur. A total of 12 safety related SOVs were identified in this area. This number included the SOVs associated with the six Steam Generator Blowdown Sample Containment Isolation Valves discussed above. The other six SOVs were for the feedwater flow control and bypass isolation valves. The licensee performed testing of similar model ASCO SOVs. These valves were determined to be acceptable for interim use until they could be replaced during the upcoming refueling outage in September 1996.

2) MOPD Below Instrument Air System Normal Operating Pressure:

These problems included SOVs with MOPDs that were below 100 psig, the normal operating pressure of the Instrument Air (IA) system. Credit was not taken for the pressure regulators to limit pressure since they were procured as non-safety related components. Assuming the regulator fails would result in the SOV being pressurized to the normal IA system pressure. This would allow SOV overpressurization if it were rated below 100 psig resulting in potential leakage. A total of 28 safety related valves were identified in this area. The licensee planned to replace these SOVs during the upcoming refueling outage in September 1996.

3) MOPD Below Instrument Air System Maximum Design Pressure:

While the normal operating pressure of the IA system is 100 psig, its maximum design pressure is 125 psig. Therefore, the licensee assumed SOVs with an MOPD less than 125 psig were also susceptible to overpressurization. Again, credit was not taken for the pressure regulators. A total of 19 SOVs were identified in this area. The licensee planned to replace these SOVs during the upcoming refueling outage in September 1996.

At the end of this inspection period, the licensee was in the process of completing their evaluation of safety-related SOVs. Similar evaluations were to be completed for non-safety related SOVs that could have an adverse impact on the plant.

The inspectors concluded that the licensee was conducting an exhaustive investigation to completely resolve the SOV MOPD concerns.

Root Cause

The inspectors reviewed the licensee's actions in response to NRC Information Notice 88-24, Failures of Air-Operated Valves Affecting Safety Related Systems, dated May 13, 1988. This Notice alerted licensees of potential SOV overpressurization failures caused by exceeding the MOPD rating. The inspectors learned that the licensee had failed to evaluate the concerns addressed by the Notice in 1988 due to an engineering organization oversight.

In February 1995, during an NRC commitment to perform a sample review of their operating experience program, the licensee became aware that Information Notice 88-24 had not been adequately evaluated. At that time, CR 95-00549 was initiated to reevaluate the concerns addressed by the Notice. Action Item #1 of the CR, requested a review of MOPD versus supplied air pressure for all safety related SOVs. As a result of this review, 14 safety related SOVs were identified where the supplied air pressure exceeded the MOPD rating. The evaluator failed to recognize the potential significance of this finding and did not initiate a separate Condition Report or Operability Determination for the deficiencies identified. As a result, the impact of the MOPD discrepancies was not evaluated. The inspectors also noted that the evaluator was unable to determine the MOPD rating for eight other SOVs due to their model numbers being unknown at the time. No further review or apparent attempt was made to determine the model numbers and MOPD ratings. A status of "unknown" was documented for these valves with respect to whether their MOPD was exceeded. Action Item #1 was closed after review by the evaluator's supervisor on May 19, 1995, without having initiated a CR,

operability determination, or identifying the missing SOV information. Action Item #2 of CR 95-00549 stated that the SOVs identified with their MOPD exceeded would be replaced during the September 1996 refueling outage. However, the inspectors noted that Work Requests had not been prepared to ensure that this work would be scheduled. While this action item was still open in the licensee's CR database, with a due date of Refueling Outage 17 (September 1996), it was unclear whether the action item would have been identified to have completed the work during the outage.

Conclusion

10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, defective material and equipment, are promptly identified and corrected.

The inspectors concluded this issue was a violation of 10 CFR 50, Appendix B, Criterion XVI, in that the licensee failed to take adequate corrective actions after it was identified that the supplied air pressure exceeded the MOPD for 14 safety related SOVs. As a result, the adverse conditions remained unanalyzed until May 1996. This item is identified as Violation (VIO) 50-261/96-10-01: Inadequate Corrective Actions for SOV Design Discrepancies.

E8.2 (Closed) VIO 261/94-24-01, Inadequate Testing of Alternate AC Power

Source: The licensee responded to this violation in a letter dated November 11, 1994. This violation involved inadequate procedures for testing to demonstrate the one hour capability of the Station Blackout alternate AC power source. The licensee's corrective actions involved review of the test data and procedure changes to improve management controls over test activities. The licensee concluded that the testing performed demonstrated the station blackout capability. In an acknowledgement letter to the licensee dated January 30, 1995, NRC concurred with the licensee that the test activity was adequate. The inspectors verified that all of the corrective actions had been completed. The inspectors verified that all test document records were assembled into a consolidated and readily available package. The licensee's November 11, 1994, letter also contained a commitment to replace submerged cables associated with NCV 261/94-24-02 which could not be qualified by testing. The completion of upgrading or replacing submerged cables as outlined in Modification M-1165 was completed by end of RFO16. The inspectors reviewed the modification package documentation and verified that the unqualified cables were replaced. This item is closed.

- E8.3 (Open) Inspector Followup Item (IFI) 261/94-08-02, Incorporate 24 Hr Load Testing into TS Surveillance Requirements: This IFI involved the licensee's commitment to revise the TSs to require testing during each refueling outage with a proper power factor to demonstrate the ability of the emergency diesel generators to carry accident loads. This commitment was part of the licensee's corrective actions for NRC Violation 50-261/93-07-01. The licensee submitted the TS change in a letter to NRC dated January 30, 1996. A request for additional information was sent by the NRC to the licensee on April 12, 1996, which the licensee responded to in a letter dated May 20, 1996. This IFI will remain open pending review of implementation of the new TS requirements after the revised TS is issued.
- E8.4 (Closed) Escalated Enforcement Item (EEI) 50-261/94-16-04, Inadequate Control Room Ventilation Testing Program: The Control Room Ventilation System (CRVS) design was incomplete in that it did not consider all modes of Heating, Ventilation, and Air Conditioning (HVAC) system lineups and the effect of these lineups on Control Room habitability. The UFSAR, Sections 6.4 and 9.4.2, requires that the CRVS be capable of maintaining the control room at a positive differential pressure with respect to adjacent areas and the outdoors when the CRVS is operated in the emergency pressurization mode. Neither design reviews nor surveillance testing identified that the CRVS was unable to meet this requirement.

On May 7, 1994, the licensee identified during special ventilation balancing testing that air pressure in Room E1/E2 which is adjacent to the control room exceeded control room pressure. The licensee determined that, under certain accident conditions, the Auxiliary Building Supply Fan (HVS-1) would continue to supply air to Room E1/E2 while credit could not be taken for the ventilation exhaust fan (HVE-7). This event is described in more detail in Inspection Report 50-261/94-16 and the licensee's September 29, 1994, response to the violation.

The licensee revised plant operating procedures and emergency operating procedures to place restrictions on HVS-1. Engineering Surveillance Test, EST-023, Control Room Emergency Ventilation System (once per 18 months), was revised by Revision 10 to test the CRVS in the "worst case" mode and to compare Control Room pressure to adjacent areas to ensure positive Control Room pressure.

The inspector reviewed EST-023, Revisions 10 and 12 and noted that Section 8.6.2 requires that both HVE-7 and HVS-1 be secured prior to taking pressure measurements in the Control Room and adjacent areas. Abnormal Operating Procedure, AOP-005, Radiation Monitoring System, Revision 15 was also reviewed and the response to the Control Room Radiation Monitor alarm is to

open the circuit breaker for HVS-1. The inspectors verified that the licensee revised its procedures and tests the CRVS in the "worst case" mode. The inspectors consider that the licensee has completed its corrective actions and this item is closed.

- E8.5 (Closed) LER 50-261/94-008-01, Condition Outside Design Basis Due to Control Room HVAC Inoperability: This event was described and reviewed in the previous Section E8.4. The item is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls (71750)

R1.1 Tours of the Radiological Control Area (RCA)

The inspectors periodically toured the RCA during the inspection period. Radiological control practices were observed and discussed with radiological control personnel including RCA entry and exit, survey postings, locked high radiation areas, and radiological area material conditions. With one exception discussed in Section R1.3, the inspectors concluded that radiation control practices were proper.

R1.2 Irradiated Fuel Shipment

a. Inspection Scope (40500, 71750, and 86750)

The inspectors reviewed the licensee's requirements and procedures related to irradiated fuel shipment. The review included a NAS assessment of shipment readiness and table top exercises conducted with outside agencies.

In addition, the inspectors observed activities associated with the receipt of empty spent fuel shipping casks, cask loading, decontamination, and the August 12, 1996 shipment.

b. Observations and Findings

NAS Assessment of Spent Fuel Shipment Readiness

In May 1996, NAS conducted an assessment of the Robinson spent fuel shipping program in order to determine the readiness of the program to conduct effective shipping activities. The results of this assessment were documented in NAS Report R-SF-96-01, dated May 31, 1996. The inspectors reviewed the report and determined that the assessment was thorough and

probing. The assessment identified one strength, four issues, and one weakness. The major problems identified involved the following:

- Some safety features for the spent fuel handling system which were described in various licensing documents, were not procedurally controlled or tested,
- The training and qualification of spent fuel team members was not effectively administered,
- The Spent Fuel Shipping Manual, Certificate of Compliance, Safety Analysis Report, and various technical manuals were not effectively controlled,

The inspectors verified that CRs were initiated to address the problems identified and that necessary actions were initiated to correct these problems prior to initiation of actual spent fuel shipment activities. The inspectors noted good management attention and sensitivity in correcting these problems prior to the fuel shipment.

Receipt of Empty Spent Fuel Shipping Casks

On July 9, the inspectors attended a pre-job briefing held prior to bringing two empty spent fuel shipping casks on railcars inside the protected area. The meeting was attended by personnel from maintenance, operations, radiation protection, and corporate fuel shipping area that had actions or responsibilities in moving the cask inside the protected area. The inspectors noted that good discussions were held on the details and logistics for moving the casks. A management representative was assigned to coordinate the activity in accordance with PLP-37, for infrequent evolutions. As a result of good coordination and planning, the casks were brought in without any major incident. The inspectors reviewed the shipping receipt package, including the radiological surveys of the railcars, to verify that the railcars were properly received. No discrepancies were identified.

Table Top Exercise with Outside Agencies

On July 23, the licensee held a "table top" exercise with their staff and a representative from the South Carolina Emergency Preparedness Division (EPD) Director's office. The exercise was to validate the procedures necessary to address an accident involving the spent fuel shipment. This was the first spent fuel shipment in several years. The exercise revealed that the coordination between the licensee and the state organizations needed to be improved.

On July 31, another "table top" exercise was held and included representatives from all the involved South Carolina state and local agencies. The State Police were concerned about the timely transmission of radiological information. The differences between the state's and CP&L's emergency plan was the most significant issue that surfaced during the exercise. The State EPD had written their plan based on the licensee's plan. The licensee revised their plan in the interim and had not advised the state of their action. The issue was resolved by both organizations working together to resolve the differences which consisted of reporting protocol. The licensee documented the identified issues in CR 96-01797.

The inspectors concluded that the table top exercises with the outside agencies revealed communication and coordination weaknesses in sufficient time to have been resolved prior to the shipment.

Compliance with the Cask Certificate of Compliance

The inspectors reviewed whether the licensee met the conditions specified in the Model No. 300 Spent Fuel Shipping Cask Certificate of Compliance (COC). Based on a review of the list of authorized users, the inspectors verified that Carolina Power & Light was a registered user of the IF-300 spent fuel shipping cask. The inspectors reviewed Revision 31 of the COC and selected eighteen of the specifications in the COC for verification of compliance.

The inspectors reviewed the licensee's Irradiated Fuel Data Sheets (IFDS) dated July 22, 1996. The IFDSs provided information on the fuel's physical characteristic, fissionable isotopic composition, and history, and a direct comparison between specifications in the COC fuel requirements and the fuel being shipped. The inspectors made an independent comparison between the information in the IFDSs to the fuel's specifications in the COC.

Selected pages from the licensee's completed procedure, Corrective Maintenance Procedure CM-M0303, Cask and Equipment Skid Annual Inspection (IF-300 Series), Revision 6, were reviewed to verify that the casks were being maintained. The completed procedure indicated that the maintenance was performed on IF-303 and IF-304 during June and July 1996, and that the following selected maintenance specifications from the COC were performed:

- 96-ACG, Hydrostatic pressure test and annual leakage test
- Installation of a new head gasket,
- Installation of a new rupture disk,
- 96-ACG, test of cask preconn valves and circle seal valves, and,

- Testing of the relief and reseal pressure for the two neutron shield relief valves plus their leak test results.

The inspectors reviewed completed procedure, Spent Fuel Shipping Procedure SFS-001, IF-300 Shipping Cask Operations Revision 13, dated July 30, 1996, and verified the procedure contained steps for draining and purging the cask. Purging of the cask was a specification in the COC.

The inspectors determined that all of the COC specifications selected by the inspectors were completed as required and the licensee was meeting the conditions specified.

Procedures Controlling the Handling of Spent Fuel Shipments

The inspectors reviewed the licensee's "Spent Nuclear Fuel Shipping Program Manual" (Plan) Revision 10, dated July 22, 1996, which discussed the Concept of Operations, Organization and Responsibilities, and Training.

The inspectors reviewed the licensee's Spent Fuel Shipping Procedure SFS-001, IF-300 Shipping Cask Operations Revision 13, dated July 30, 1996, which discussed the spent fuel shipment process for receiving and inspection of the spent fuel container railcars, relocating the cask to the decontamination building, loading the fuel into the cask, transferring the cask to the decontamination building, filling the cask with inert gas, and loading the cask back onto the rail car. The inspectors selected Section 8.20 through 8.23 for a detailed review. In the review, the inspectors noted that:

- In SFS-001, a necessary procedural step to open cask drain valve CD-1 after performing Step 8.2.1.14 was missing. A closer review of the missing step in SFS-001, revealed that the step was in place in Revision 12, of SFS-001. It was concluded that while revising SFS-001 Revision 12 after performing a table top review of the procedure, a word processing error resulted in the step being deleted in Revision 13 of SFS-001. The inspectors verified that the operators had actually performed the step and that a procedure step deviation was documented.
- As written, SFS-001 did not appear to accomplish three purges with inert gas as required in the COC. SFS-001 step 8.21.15 stated that "When helium exhausts from the drain hose, close the cask fill/drain valve CD-1". The procedure proceeded to clearly require two distinct purges. The licensee stated that although not proceduralized or documented, that during this step, they allowed helium to flow through the drain hose for approximately 10 to 15 minutes. In order to remove

any uncertainties concerning the adequacy of the initial purge, the licensee performed an additional purge on each of the casks. The licensee agreed that the procedure was not clear and that it would be revised to clearly indicate three distinct purges.

The inspectors noted that an independent assessment of the licensee spent fuel operating procedures was performed by VECTRA Technologies Incorporated. The inspectors reviewed a letter dated May 23, 1996, from VECTRA that stated VECTRA had reviewed the licensee's operating procedures referenced as conditions of approval in the COC and determined that the criticality control provisions were acceptable.

The inspectors concluded from the review that:

- The licensee's Plan was organized and satisfactorily defined roles and responsibilities in the fuel shipment,
- Procedures were in place to maintain the cask, and
- Procedures were in place to receive the cask, load spent fuel into the cask, and ready the cask for shipment.

Radiological Surveys for Shipment

The inspectors reviewed licensee's radiological surveys to verify that the licensee adequately decontaminated the spent fuel shipping cask to meet the radiological requirement for transportation specified in 49 CFR 173.441.

The inspectors observed the licensee morning Health Physics briefings of Radiation Work Permit (RWP) 96-0185 which was used to perform work on the spent fuel cask. The briefings were detailed and informative. The briefings updated personnel on the status of the cask decontamination efforts, radiological conditions, clothing requirements for the area, and where they were in the procedure. The inspectors accompanied the licensee into the work areas and observed the licensee Health Physics practices around the cask decontamination area and the railcar.

The inspectors observed the licensee decontaminate cask IF-304 using high pressure spray, cleaning solvents, and scouring pads, in the cask decontamination area. When the radiological surveys indicated that the surface contamination was below the licensee's limits of 1000 disintegrations per minute (dpm)/100 centimeter (cm) square, the licensee used procedure SFS-001, IF-300 Shipping Cask Operations Revision 13 to transfer cask IF-304 from the decontamination area to the railcar.

The inspectors observed the licensee load the cask onto the railcar, conduct radiation surveys around the railcar, perform gamma and neutron surveys around cask IF-304, and perform contamination surveys (swipes) of the cask and count the swipes in the lab. Once the surveys were completed, the inspectors reviewed the licensee's survey sheets. This gamma/neutron survey also satisfied one of the specifications of the COC discussed above.

After IF-304 cask was loaded onto the railcar, the inspectors conducted an independent survey of the cask to determine if the radiation and contamination levels were below the limits in 49 CFR 173.441. The inspectors determined that the contact readings on the surface of the cask ranged from 2 millirem/hour (mRem/hr) to an isolated area that read 36 mRem/hr and, at 2 meters, radiation levels were less than or equal to 3.5 mRem/hr. The inspectors also performed an independent surface contamination survey by performing swipes of ten areas of the cask and observing the licensee count the swipes. Most of the swipes averaged approximately 100 dpm/100 cm square. All of the swipes taken by the inspector were less than the licensee's limit of 1000 dpm/100 cm square.

The inspectors concluded that radiation and contamination levels were below the transportation limits for shipments contained in 49 CFR 173.441 of 10 mRem/hr at 2 meters, 200 mRem/hr on contact, and less than of 2200 dpm/100 cm square loose surface contamination.

c. Conclusions

The inspectors concluded effective procedures were implemented to safely control irradiated fuel shipment activities. Minor spent fuel cask handling procedure discrepancies identified were appropriately resolved by the licensee. A NAS assessment of the spent fuel shipment program readiness was thorough and probing. NAS assessment and table top exercise weaknesses were properly resolved and effective program enhancements were implemented prior to conducting shipment activities. The inspectors observed that adequate controls were implemented during the August 12, 1996, spent fuel shipment.

R1.3 Inadequate Labeling of Spent Fuel Cask Container

a. Inspection Scope (71750)

While performing routine inspection activities in the RCA, the inspectors determined that a loaded spent fuel shipping cask container did not have a radioactive material label attached. The licensee initiated CR 96-01867 to address this discrepancy.

b. Observations and Findings

On August 12, the inspectors observed the radiological controls for storing two spent fuel shipping cask containers, loaded on separate railcars, inside the RCA. The casks had recently been loaded with spent fuel and were awaiting shipment from the site. The inspectors noted that radiological rope and posting had been setup around both containers that housed each cask, however, radioactive material labels were not attached to one of the cask containers. The inspectors recalled during previous observations over the past week, that the container had been properly labeled. After notifying RC personnel of the potential problem, the cask container was surveyed and the appropriate labels were affixed. The licensee initiated CR 96-01867 to address this discrepancy.

10 CFR 20.1904, Labeling Containers, requires that containers of licensed material be labeled with the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL," and provide information regarding the radiation levels and date the measurement was made. This information is necessary to alert personnel working in the vicinity of the containers to take precautions to avoid or minimize exposures. 10 CFR 20.1905 provides certain exemptions from labeling containers. One of these exemptions include the case where containers are in transport and the railcars carrying them are placarded in accordance with the Department of Transportation regulations in 49 CFR 172. The inspectors determined that when the missing label was identified, the licensee had not yet properly placarded the railcars in accordance with 49 CFR 172, therefore, the labeling requirements of 10 CFR 20 were still applicable.

The inspectors reviewed the licensee's procedures for controlling the radiological labeling requirements for containers with radioactive material in excess of the limits established by Appendix C to 10 CFR 20. This included a review of the following procedures:

- Health Physics Procedure HPP-007, Handling and Storage of Contaminated and Radioactive Material, Revision 18, and,
- HPP-255, Shipping and Receiving the IF-300 Cask, Revision 10.

The inspectors determined that the procedures provided adequate guidance and expectations for conforming to the requirements of 10 CFR 20.1904, 20.1905, and 49 CFR 172, for labeling containers. Based on discussions with the licensee, they believed that the label had been removed by RC personnel on August 11, when the cask was removed from its container and decontaminated. In accordance with 10 CFR 20, a label is not required to be

affixed to the container when the cask is not loaded. Apparently, when the cask was returned that same day, a label was not re-affixed to the container.

As corrective action, the licensee planned to revise the cask receipt checklist contained in HPP-255 to include requirements and signoffs that a radiation label be affixed to the spent fuel shipping container upon receipt and removed only once the cask is accepted for shipment by the shipping carrier. The inspectors concluded that this procedure enhancement would provide more positive labeling controls and should prevent recurrence of this problem.

c. Conclusions

The inspectors concluded this issue to be a violation of 10 CFR 20.1904 for failure to label a container of licensed radioactive material in excess of quantities listed in Appendix C to 10 CFR 20. This failure constitutes a violation of minor significance and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy. This item will be identified as NCV 50-261/96-10-02: Failure to Label Spent Fuel Cask Container in Accordance with 10 CFR 20.

R2 Status of Radiation Protection Controls and Equipment

R2.1 Failure of Radiological Information Management System (RIMS)

a. Inspection Scope (71750)

The inspectors reviewed the results of the licensee's investigation of loss of RIMS. Two CRs and exposure estimates of affected individuals were reviewed.

b. Observations and Findings

The licensee has an electronic dosimetry system (EDS) and the EDS work stations for all three sites are connected to a centralized computer. The dose for each individual leaving the radiological control area is down loaded into the RIMS database.

On June 8, 1996, RIMS entered a scheduled 33 hour outage to make software changes. The licensee took steps not to affect the Access Control software. The system worked properly when an individual logged in. When the individual logged out, the local work station indicated that a normal transaction took place. However, the data was not loaded into the database. The licensee discovered the problem when it was observed that there was excessive downtime with PC Access Control. Two CRs were written. CR 96-01481 was

written by the site and CR 96-1612 was written by Corporate Radiological Services.

The site E&RC organization obtained security records to determine who had entered the RCA and the duration of their stay. The licensee determined that 39 individuals entered the RCA. Thermoluminescent dosimeters (TLDs) of those individuals were pulled and read to obtain a conservative estimate of the exposure dose received. Exposure estimates were made for those individuals without TLDs. The licensee was conservative in their estimates. All individuals were interviewed and all reviewed and signed their estimated dose. Thirty-eight mRem was the maximum dose assigned. The inspectors observed and reviewed the licensee's investigation of the CR.

c. Conclusions

The inspectors determined that the licensee's investigations and corrective actions for CR 96-1612 were adequate. The investigation revealed that PC Access Control software system worked as designed except that the Access Control Recovery Screen appeared to accept data but did not. The inspectors considered this incident an isolated occurrence requiring no additional corrective action.

S1 Conduct of Security and Safeguards Activities (71750 and 81310)

S1.1 Inadequate Lighting of Spent Fuel Cask Rail Cars in the Protected Area

a. Inspection Scope (71750)

The inspectors observed during a tour of the protected area that the lighting under two rail cars inside the protected area was not adequate. The inspectors discussed the discrepancy with security personnel and reviewed the licensee's Industrial Security Plan and security procedures with regard to protected area minimum lighting requirements.

b. Observations and Findings

On July 25, the inspectors observed that extra lighting installed to illuminate the space under two rail cars that were temporarily located inside the protected area was inadequate. A string of incandescent light bulbs had been placed on the outside of one of the cars and a single Halogen lamp was placed on the ground near the other car. The inspectors observed that one of the incandescent bulbs and the Halogen lamp had failed. The inspectors notified the licensee of the lighting discrepancies and questioned whether minimum lighting illumination under the cars was met under the conditions observed.

The licensee later measured the lighting levels under the rail cars and found it to less than the required 0.2 foot-candles. However, the licensee believed that the area was adequately backlighted.

The licensee performed an inspection within the protected area during the evening of July 25 and identified four additional areas which had inadequate lighting. Two paint sheds, a trailer, and an air compressor were identified as requiring additional lights or bulb replacement. Corrective action was completed the next day. CR 96-01731 was issued to document the lighting discrepancies.

The inspectors later became aware that on July 12, a NAS individual had identified to security personnel a lighting level concern for another trailer located inside the protected area. The on-shift security staff failed to followup on the concern indicating a lack of sensitivity to the lighting requirements.

10 CFR 73.46(c)(4) and 73.55(c)(5) requires that all exterior areas within the protected area be illuminated to at least 0.2 foot candles measured horizontally at ground level. In addition, Section 3.1.3 of the licensee's Industrial Security Plan, Revision 32, dated April 26, 1996, states, in part, "the exterior protected area will be lighted to a level sufficient for monitoring, surveillance, and observation requirements, but not less than 0.2 foot-candles measured horizontally at ground level. Compensatory measures for degraded illumination (less than 0.2 foot-candles) in exterior portions of the protected area will be in the form of increased visual surveillance." The inspectors reviewed the Security surveillance sheets for July 1996. No additional surveillances were logged for the rail cars indicating that the discrepant conditions had not been identified.

c. Conclusions

The installation of security lighting under the rail cars was inadequate, and routine patrols of the area failed to identify this condition and correct the deficiencies or implement compensatory measures. The failure to meet the illumination level of at least 0.2 foot-candles or implement compensatory measures for the degraded illumination conditions was identified as Violation 50-261/96-10-03: Failure To Follow Security Plan for Minimum Lighting Requirements.

S1.2 Security Controls of Spent Fuel Shipments

a. Inspection Scope (81310)

The inspectors reviewed the licensee's compliance with 10 CFR 73.37(f) with regard to advance notification of irradiated fuel shipment, protection of Safeguards shipment information, and security controls established for irradiated fuel shipments from the site.

b. Observations and Findings

By letter dated July 30, 1996, to the NRC the licensee complied with the prior notification requirements of 10 CFR Part 73.37(f), by providing 10 days advance notice of a shipment of irradiated fuel. This letter was also furnished to the designated representatives of the Governors of South and North Carolina, thus meeting the requirement to provide the states with 7 days advance notice. The requirements of 10 CFR Part 73.21 were met in that the licensee stamped as "Safeguards Information" those portions of the letter which revealed dates, times and routes of the actual shipment.

Throughout this inspection, the licensee's efforts to protect Safeguards Information from unauthorized disclosure was evident at all levels of involvement.

Also noted was the compensatory measure utilized at the Robinson perimeter when the site vehicle barrier was removed to allow the opening of the railroad gate. An officer was continuously posted who was armed with a contingency high-power rifle.

The inspectors found that the 3 Escorts were assigned to this shipment were knowledgeable of their duties and responsibilities. They were also very familiar with Emergency Procedures and the content of the Emergency Kit located in the caboose of the train. The Senior Escort, a trained health physicist from the Harris Nuclear Plant, explained to the inspectors the function of the three radiation detectors found in this Kit as well as other contingency equipment located therein. The multi-means of communication from the locomotive and the caboose were also demonstrated to the inspectors, a review of logs revealed that prior to the arrival of the CSX locomotive engine the licensee had verified all telephone numbers, radio frequencies and cellular capabilities for state, county and local law enforcement agencies along the route of this shipment.

The inspectors learned that these Escorts were aware of the guidance found in the following licensee procedures:

HPP-256, Advance Notification For Shipments
SEC-2120, Protection of Safeguards Information
HPP-255, Shipping of IF 300 Cask
NGG-006, Spent Fuel Manual
RSP-1.1, Duties of Shipment Escorts
SEP-2.1, Shipment Emergency Duties

On August 12, at 8:28 p.m., the train left the Robinson site and was periodically monitored by the inspectors throughout the night until it arrived at the Harris site at 3:45 a.m. the next day. Upon arriving at the Harris facility the inspectors reviewed the licensee's record of communication checks and determined that the required checks were accomplished as required every 90 minutes.

c. Conclusions

The inspectors concluded that the licensee's program for shipping irradiated fuel was found to be in compliance with 10 CFR Part 73.37. No discrepancies were identified with the security controls for the spent fuel shipment conducted on August 12.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on August 26, 1996. An interim exit was conducted on August 7, 9, and 12, 1996. The licensee acknowledged the findings presented.

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

PARTIAL LIST OF PERSONS CONTACTED**Licensee**

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D. Crook, Senior Specialist, Licensing/Regulatory Compliance
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B. Meyer, Manager, Operations
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J. Moyer, Manager, Maintenance
D. Stoddard, Manager, Operating Experience Assessment
R. Warden, Acting Manager, Nuclear Assessment Section
T. Wilkerson, Manager, Environmental Control
D. Young, General Manager, Robinson Plant

NRC

P. Byron, Resident Inspector, Brunswick
J. Zeiler, Acting Senior Resident Inspector

INSPECTION PROCEDURES USED

IP 37550: Engineering
 IP 37551: Onsite Engineering
 IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
 IP 60855: Operation of an Independent Spent Fuel Storage Installation (ISFSI)
 IP 61726: Surveillance Observations
 IP 62703: Maintenance Observation
 IP 71707: Plant Operations
 IP 71750: Plant Support Activities
 IP 81310: Physical Protection of Shipments of Irradiated Fuel
 IP 86750: Solid Radioactive Waste Management and Transportation of Radioactive Materials
 IP 92902: Followup - Maintenance
 IP 92903: Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
VIO	50-261/96-10-01	Open	Inadequate Corrective Actions for SOV Discrepancies (Section E8.1)
NCV	50-261/96-10-02	Open	Failure to Label Spent Fuel Cask Container in Accordance with 10 CFR 20 (Section R1.3)
VIO	50-261/96-10-03	Open	Failure To Follow Security Plan for Minimum Lighting Requirements (Section S1.1)

Closed

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
LER	50-261/93-015-00	Closed	Pressurizer Pressure Transmitters Out of Calibration (Section M8.1)
LER	50-261/94-003-00	Closed	TS Required Shutdown Due to Emergency Diesel Generator Inoperability (Section M8.2)
LER	50-261/94-011-00	Closed	Technical Specification 3.0: Emergency Diesel Generator Inoperability (Section M8.3)

LER	50-261/94-019-01	Closed	TS Violation Due to Exceeding Pressurizer Cooldown Rate (Section M8.4)
URI	50-261/96-08-01	Closed	Review Licensee Investigation and Resolution of Solenoid Valve Discrepancies (Section E8.1)
VIO	50-261/94-24-01	Closed	Inadequate Testing of Alternate AC Power Source (Section E8.2)
EEL	50-261/94-16-04	Closed	Inadequate Control Room Ventilation Testing Program (Section E8.4)
LER	50-261/94-008-01	Closed	Condition Outside Design Basis Due to Control Room HVAC Inoperability (Section E8.5)

Discussed

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
IFI	50-261/94-08-02	Open	Incorporate 24 Hr Load Testing into TS Surveillance Requirements (Section E8.3)