U.S. NUCLEAR REGULATORY COMMISSION (NRC)

REGION II

Docket Nos:	50-348 and 50-364
License Nos:	NPF-2 and NPF-8
Report No:	50-348/96-09 and 50-364/96-09
Licensee:	Southern Nuclear Operating Company (SNC), Inc.
Facility:	Farley Nuclear Plant (FNP), Units 1 and 2
Location:	7388 North State Highway 95 Columbia, AL 36319
Dates:	September 1 - October 12, 1996
Inspectors:	T. Ross, Senior Resident Inspector J. Bartley, Resident Inspector J. Blake, Reactor Inspector (Sections M2, M3, M6, and M8) R. Caldwell, Resident Inspector (In training) R. Chou, Reactor Inspector (Section E1.1 thru 3) M. Ernstes, Operator Licensing Examiner (Section O5.1) W. Kleinsorge, Reactor Inspector (Sections R1.2, R2, R3, R7) J. Lenahan, Reactor Inspector (Section E7.1 and 2)
Approved by:	P. Skinner, Chief, Projects Branch 2 Division of Reactor Projects

Enclosure 2

EXECUTIVE SUMMARY

Farley Nuclear Power Plant, Units 1 And 2
NRC Inspection Report 50-348/96-09, 50-364/96-09

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident and regional inspections.

Operations

- Overall, both units operated well at steady state full power. The conduct of operations by Operations personnel and management was consistently in compliance with procedures and regulatory requirements, and reflected conservative operation (Section O1).

- Shift operators remained very attentive to plant conditions, and were quite knowledgeable of plant status and ongoing activities (Section O1.1).

- The transfer of Unit 2 new fuel to the spent fuel pool was very well controlled (Section O1.2).

- Operator performance in response to the Unit 2 main feedwater transient and shutdown of Unit 2 for the upcoming refueling outage was exemplary (Sections O1.3 and O1.4).

- A violation was identified for two instances of mispositioned valves due to personnel errors by non-licensed operators that caused two letdown system transients on Unit 2 and inoperability of the 1B emergency diesel generator (Section O1.5).

- Overall housekeeping and physical conditions of the plants remained adequate (Sections O2.1 - O2.3).

- A noncited violation was identified for failing to incorporate a newly approved license amendment into plant procedures (Section O3.1).

- The requalification program complied with the requirements and standards of plant procedures as well as the requirements of 10 CFR 55.59 for the areas inspected. There continued to be some problems in ensuring the operators are properly retrained on identified weaknesses (Section O5.1).

- Operator overtime was well controlled (Section O6.1).

Maintenance

- Maintenance and surveillance testing activities were routinely conducted in a thorough and competent manner by well qualified individuals in accordance with plant procedures and work instructions (Section M1.1).

- Major work activities (i.e., epoxy coating of component cooling water heat exchangers and control room air conditioning modification) were well coordinated, exhibited good craftsmanship, and accomplished according to approved work instructions and procedures (Sections M1.2 and M1.3).

- Current status and history of the FNP steam generators indicate that the licensee has been doing a conscientious job of managing steam generator degradation (Section M2.1).

- Licensee and contractor procedures for the evaluation and management of steam generator eddy current data appear to be adequate for the circumstances (Section M3).

- Steam generator degradation has been properly managed even though the integrated program for management has not been documented (Section M6).

Engineering

- Design change control process procedures comply with regulatory requirements (Section E1.1).

- Design change packages were generally of good quality. However, several minor discrepancies with the associated installation drawings were identified (Section E1.2).

- Additional examples of recent and pre-existing as-built design discrepancies associated with cable tray and pipe supports were identified. The number of welding discrepancies identified indicates that the licensee's welding inspection program may be deficient (Section E1.2).

- Program for control and handling of heavy loads was adequate (Section E1.3).

- Engineering and technical support and oversight of major maintenance, modification and inspection activities were evident and effective (Section E1.4).

- Quality assurance audits of engineering activities provided useful insights (Section E7.1).

- Safety system self-assessment program has been a very effective tool in identifying and correcting deficiencies in design and operation of critical safety systems (Section E7.2).

Plant Support

- Implementation of radiological controls in the radiologically controlled areas were evident and generally effective. Overall, the radiologically controlled areas were adequately maintained and posted (Section R1.1).

- Primary and secondary water chemistry controls were appropriate, and in compliance with regulatory requirements and industry guidelines, with some exceptions (Section R1.2 and R3.1).

- Procedures, equipment, and practices for monitoring primary-to-secondary leakage were appropriate (Section R2.1).

- Primary and secondary water chemistry program was subjected to independent audits, with appropriate action taken for identified weaknesses (Section R7.1).

- Emergency drills were well coordinated by Emergency Planning personnel, and demonstrated the readiness of emergency response personnel and facilities (Section P4.1).

- Routine security activities continued to be performed in a conscientious and capable manner, assuring the physical protection of protected and vital areas (Section S1.1). However, in one instance, miscommunication between Security and Health Physics resulted in a trailer entering the protected area without being properly searched. This was identified as an unresolved item (Section S1.2).

- Two apparent violations were identified regarding inadequate installation and inspection of Kaowool one-hour fire barriers required by the Fire Protection Program. An enforcement conference to consider escalated enforcement has been scheduled (Section F2.1).

- One unresolved item was identified concerning the adequacy of qualification testing on Kaowool fire barriers (Section F2.1).

- Fire brigade drill demonstrated proficiency of fire fighting capability (Section F5.1).

Report Details

Summary of Plant Status

Unit 1 operated steadily at 100% power for the entire inspection period.

Unit 2 operated steadily at 100% power for the entire inspection period, except for two brief power reductions. On September 8, the unit was ramped down to 70% power to search for main condenser tube leaks. Then again on September 23, Unit 2 was ramped down to 95% power in response to transient conditions caused by the 2A steam generator feed pump (SGFP). After 317 days of continuous operation, Unit 2 was shutdown on October 12 to begin its eleventh refueling outage (U2RF11).

I. Operations

O1 Conduct of Operations

O1.1 Routine Observations of Control Room Operations (71707)

Using Inspection Procedure (IP) 71707, the resident inspectors conducted frequent inspections of ongoing plant operations including routine tours of the main control room (MCR) to verify proper staffing, operator attentiveness, and adherence to approved operating procedures. The inspectors also regularly reviewed operator logs and Technical Specifications (TS) Limiting Condition of Operation (LCO) tracking sheets, walked down the main control boards (MCB), and interviewed members of the operating shift crew to verify operational safety and compliance with TS. The inspectors attended daily plant status meetings to maintain awareness of overall facility operations, maintenance activities, and recent incidents. Morning reports and Farley Nuclear Plant Incident Reports (FNPIR) were reviewed on a routine basis to assure that potential safety concerns were properly reported and resolved.

Overall control and awareness of plant conditions during the inspection period were excellent. During tours of the MCR, the inspectors regularly observed that very few MCB, emergency power board (EPB), and balance of plant panel annunciators were in alarm at any one time. One or two persistent annunciator alarms prevented Unit 2 from achieving "blackboard". However, Unit 1 and the EPB were frequently in a blackboard condition. Operator attentiveness to, and knowledge of, plant conditions and status of ongoing activities continued at a high level. The combined number of MCB deficiencies was reduced to less than 20, demonstrating management resolve for keeping MCB deficiencies as few as possible. Many of the remaining deficiencies were on Unit 2 MCB, awaiting the upcoming refueling outage.

O1.2 Unit 2 Transfer of New Fuel to the Spent Fuel Pool (60705 And 71707)

The resident inspectors observed the transfer of several new fuel assemblies from the new fuel storage racks to the Unit 2 spent fuel pool (SFP) in accordance with (IAW) FNP-0-FHP-3.0, "Receipt and Storage of New Fuel," Revision 28. Licensee personnel were knowledgeable and very methodical. The handling and transfer of new fuel assemblies was well controlled and consistent with procedural and TS requirements.

O1.3 Unit 2 Main Feedwater Flow Control Transient (93702)

On September 23, 1996, Unit 2 operators observed that the 2A and 2B SGFPs were experiencing sudden speed oscillations. These oscillations had a destabilizing effect on main feedwater flow to the steam generators (SGs). Operators promptly initiated a power reduction and sent a System Operator (SO) to physically examine both SGFPs in the turbine building. Operations subsequently concluded that the low pressure turbine governor valve for the 2A SGFP was malfunctioning. The steam supply to the low pressure governor valve was isolated and control of the 2A SGFP was placed on the high pressure governor valve. In about 45 minutes after the transient began, plant conditions had stabilized with the 2A SGFP back in automatic control. Unit 2 power reduction was arrested at 95% power and then returned to full power a few hours later. During the ramp up to full power, a resident inspector interviewed responsible operators, monitored 2A and 2B SGFP operation and walked down the Unit 2 MCBs. The inspector concluded that operator response to the transient was excellent and plant conditions had been restored to normal.

O1.4 Unit 2 Shutdown For U2RF11 (71707)

On October 11, 1966, Operations commenced a rampdown of Unit 2 IAW FNP-2-UOP-3.1, "Power Operation." Unit power was reduced to minimum load and the main turbine/generator (MTG) was removed from the grid, which marked the commencement of U2RF11 at one minute after midnight on October 12, 1996. Immediately following removal from the grid, operators conducted a MTG overspeed test IAW UOP-3.1, Appendix 4 and FNP-2-STP-151.5, "Main Turbine Overspeed Test." The MTG tripped at 1934 rpm, well within the required acceptance criteria. Unit 2 shutdown continued IAW FNP-2-UOP-2.1, "Shutdown of Unit from Minimum Load To Hot Standby." After entering Mode 2, operators manually tripped the reactor pursuant to UOP-2.1 and FNP-0-ETP-3661, "Control Rod Test and Evaluation Program." Operators responded to the manual trip IAW FNP-2-EEP-0, "Reactor Trip or Safety Injection," and then FNP-2-ESP-0.1, "Reactor Trip Response." A resident inspector was in the MCR observing all of the aforementioned activities. Overall, operator performance was excellent and plant equipment response was per design. However, the inspector did note a few minor problems, which included: a) Manual reactor trip first out annunciator did not alarm (this problem had been previously identified); b) Nuclear instrumentation system (NIS)

intermediate range channel NI-36 appeared undercompensated, and prevented the automatic energization of NIS source range channels; and c) Operators had difficulty maintaining Tavg within plus/minus 1.5 degrees of Tref as prescribed by UOP-2.1 (step 5.5.1). Each of these problems were discussed with site management for resolution.

O1.5 System Misalignments By System Operators (71707)

Within about a 6 week period, the plant experienced two serious system misalignment events caused by SO personnel errors that resulted in two letdown system transients and the inoperability of an emergency diesel generator (EDG).

On August 27, 1996, the licensee discovered that two valves (Transfer Header To Storage Tank valve QSY52V524 and Manual Pump Discharge To Transfer Header valve QSY52V529A) in the 1B EDG fuel oil transfer system were inadvertently left open. This misalignment of the fuel oil transfer system effectively prevented fuel oil makeup from the 1B fuel oil storage tank (FOST) to the 1B EDG day tank. Operations had discovered the misaligned valves during a refill of the 1C EDG FOST from the auxiliary FOST, when operators observed a high level alarm on the 1B FOST and sent a SO to check out the problem. Subsequent investigation by Operations, determined that the two valves in question had not been closed by the responsible SO as was required by FNP-0-SOP-42.0, "Diesel Fuel Oil Storage and Transfer System," following a refill of the 1B EDG FOST on August 23, 1996. For about five days, fuel oil makeup to the 1B EDG day tank was not possible. With just the day tank as a fuel supply, the 1B EDG would be expected to run at full load for approximately four hours. The licensee reported this event to the NRC by Licensee Event Report (LER) 50-348/96-05 dated September 20, 1996.

On October 8, 1996, a SO mispositioned two valves during two separate incidents while attempting to fluff the 2B mixed bed demineralizer IAW FNP-2-SOP-50.4, "Demineralizer Resin Removal and Addition." During the first incident, while performing Step 4.5.1.3 of SOP-50.4 which required closing demineralizer outlet valve V167B, the SO inadvertently selected valve V167A and began closing the valve. Upon hearing an unexpected change in flow noise, the SO immediately reopened the valve and notified the Shift Supervisor (SS). Prompt action by the SO prevented a serious overpressurization of the letdown line which would have occurred had he succeeded in fully closing V167A, thereby dead-heading letdown flow. During the partial closing of V167A, the Unit 2 MCR did receive a "Letdown Pressure High" alarm. After notifying the SS, the SO proceeded on with SOP-50.4, even though the SS was under the impression he had secured from the evolution and was returning to the MCR to discuss the incident. Unbeknownst to the Unit 2 operating crew, the SO proceeded to Step 4.5.1.5 which directed him to open demineralizer Johnson screen outlet valve V161B. However, the SO misread the procedure and inadvertently selected V161A, which he opened. This caused letdown flow to be diverted from the inservice 2A mixed bed demineralizer to the

primary spent resin storage tank (SRST). In the MCR, operators noticed that auto makeup to the volume control tank (VCT) had initiated and VCT level was dropping rapidly from the normal 40% level. Operators promptly started manual makeup and were able to stabilize VCT level at 21% but not restore it. The SS managed to contact the SO and direct him to close V161A. Operators were then able to restore VCT level. Subsequent review of SRST level changes concluded that approximately 800 gallons had diverted from the VCT in about six minutes.

In both of the aforementioned events, a responsible SO failed to perform applicable system operating procedures as written resulting in mispositioned valves that adversely affected operability of the 1B EDG and initiated two transients involving the Unit 2 letdown system. These personnel errors are considered a violation of TS 6.8.1 that requires compliance with plant procedures SOP-42.0 and 50.4. This is identified as violation (VIO) 50-348, 364/96-09-01, Multiple Valve Misalignments By System Operators.

O2 Operational Status of Facilities and Equipment

O2.1 <u>General Tours of Specific Safety-related Areas (71707)</u>

General tours of FNP specific safety-related areas were performed by the resident inspectors to examine the physical conditions of plant equipment and structures, and to verify that safety systems appeared properly aligned. Limited walkdowns of a more detailed nature of the accessible portions of safety-related structures, systems and components were also performed in the following specific areas:

- Control room air conditioning systems (CRACS) and emergency ventilation systems, trains A and B
- Unit 1 and 2 residual heat removal heat exchanger (HX) rooms
- Unit 1 and 2 turbine building
- Unit 1 and 2 SFP and SFP HXs
- Unit 1 and 2 component cooling water (CCW) pump and HX rooms
- Unit 1 and 2 low voltage switchyard
- Unit 1 and 2 service water intake structure (SWIS), including service water system (SWS) pumps, switchgear, and strainers
- EDG Building - 1/2A, 1B, 1C, 2B, and 2C EDGs
- Unit 1 and 2 vital 4160 volt alternating current switchgear
- Unit 1 and 2 piping penetration room 100 foot elevation
- Unit 1 and 2 piping penetration room on 121 foot elevation
- Unit 1 and 2 SFP ventilation equipment rooms
- Unit 1 and 2 hot shutdown panels
- Unit 1 and 2 turbine-driven auxiliary feedwater (TDAFW) pump rooms
- Unit 1 and 2 main steam valve rooms
- Unit 1 and 2 new fuel storage areas

Overall material conditions and housekeeping for both units were generally adequate. Minor equipment condition and housekeeping problems identified by the inspectors were reported to the responsible SS and/or maintenance department for resolution.

O2.2 Biweekly Inspections of Safety Systems (71707)

The resident inspectors used IP 71707 to verify the operability of the following selected safety systems:

- Unit 2 Containment Integrity

The inspector verified Unit 2 containment integrity using FNP-2-STP-14.0, "Containment Integrity Verification Test," Revision 14. The inspector verified accessible valves, breakers, hatches, and capped pipes were properly aligned. No discrepancies were noted.

O2.3 TS LCO Tracking and EDG Test Data Log (71707)

Resident inspectors routinely reviewed the TS LCO tracking sheets filled out by the shift foremen whenever a TS LCO action statement was entered. All tracking sheets for Unit 1 and 2 reviewed by the inspectors were consistent with plant conditions and TS requirements. An inspector also reviewed the EDG Test Data Log book, and did not identify any discrepancies.

O2.4 Tag Orders (71707)

During the course of routine inspections, the following tag order (TO) and associated equipment clearance tags were examined by the inspectors:

- TO# 96-1012-2 2B CCW Pump

All tags and the TO examined by the inspector were properly executed and implemented.

O3 Operations Procedures and Documentation

O3.1 Untimely Incorporation of TS Amendment Into Plant Procedures (71707)

By letter dated December 19, 1995, the licensee proposed to amend its TS requirements for CRACS and the control room emergency filtration system. In this letter, SNC requested that the effective date for the proposed amendment be applicable when LCOs were entered to implement the CRACS design change. However, Amendment number 119 (Unit 1) and 111 (Unit 2) for Facility Operating Licenses (FOL) NPF-2 and 8 were issued on May 21, 1996 effective upon the date of issuance. SNC recognized the problem and called the Office of Nuclear Reactor Regulation (NRR) for clarification. The NRR project manager (PM) stated that it had been their intent to issue the TS amendment as requested by SNC. Rather than

submit a letter to correct the TS amendment effective date, the licensee assumed their discussion with the NRR PM was sufficient. Some time later, as implementation of the CRACS design change became delayed, a resident inspector questioned the licensee's basis for not incorporating these amendments into applicable plant procedures, and implementing the associated CRACS surveillance requirements. Subsequent review by the NRC's Office of the General Counsel confirmed that both license amendments were in effect and could not be deferred without written NRC approval. Failure to implement newly amended TS requirements in a timely manner is usually a serious NRC concern. However, in this case, the extenuating circumstances for this violation meets the guidelines of Section VII.B.1 of the NRC Enforcement Policy for a non-cited violation (NCV) identified as NCV 50-348, 364/96-09-02, Untimely Incorporation of TS Amendment Into Plant Procedures.

O5 Operator Training and Qualification

O5.1 Licensed Operator Requalification Program

a. Inspection Scope (71001)

During the period September 17 - 20, 1996, the inspector reviewed the licensee's licensed operator requalification program to determine compliance with 10 CFR 55.59, *Requalification*. Specific areas of review included job performance measures (JPM) administration, operating examination quality, documentation of results, and remediation.

b. Observations and Findings

The inspector observed the administration of JPMs to staff Senior Reactor Operators (SROs) on the simulator and in the plant. The licensee evaluators' grading was consistent with the inspector's observations. The evaluators effectively asked follow up questions based on operator performance. This enabled them to determine the cause for an observed error and determine individual or generic program areas in need of improvement.

JPM performance by the staff SROs was marginal. Three JPMs were failed by the operators. One of the SROs failed two JPMs resulting in an overall failure for that operator. Two operators missed the same JPM when they misdiagnosed a problem with the rod control system and unnecessarily tripped the reactor.

The documented remediation for the operator who failed the JPM walkthrough adequately addressed the weaknesses observed by the inspector. The inspector reviewed the documentation of remediation for other operators who failed their annual examination this year. Farley procedure FNP-0-TCP-17.3, "License Retraining Program Administration," Revision 14 dated 12/18/95, detailed the licensee's guidelines for remedial training. Section 3.15.2 of this procedure stated that "At a

minimum, the remedial training will consist of a written study guide and assignment to an instructor who will monitor the progress of the trainee. This training will be documented using a memo similar to Figure 2". In two cases, the guidance was not fully utilized. There were not clear objectives of the training nor was there any documentation of an instructor being assigned to monitor the training and initial for its completion. The operators had been documented as having weaknesses in several competency areas. However, the remediation documented in a training department memorandum, listed only two discrete procedure issues and one general communication issue to review. Remedial training was not consistent with areas in need of improvement documented in simulator evaluations. Although the remediation was not properly documented, and its completion was not initialed for by the assigned instructor, the inspector was able to determine that adequate remediation had been conducted for the operators' performance weaknesses. This issue will be tracked as Inspector Followup Item (IFI) 50-348,364/96-09-03, Inconsistent Application of Remedial Training Documentation Guidance.

The inspector reviewed the licensee's system for providing feedback of generic weaknesses observed during requalification examinations. Peer evaluators reviewed the simulator evaluations and listed areas where additional training could improve performance. These items were documented in a memorandum to the Operations Training Supervisor. The last review, dated June 10, 1996 contained fourteen such items. This system adequately supported the feedback portion of a systems approach to training. However, in one instance the training was not effective. A crew of operators incorrectly interpreted the EEP-0, "Reactor Trip or Safety Injection," foldout page guidance and implemented FRP-P.1, "Response to Imminent Pressurized Thermal Shock Condition," unnecessarily during a large break loss of coolant accident. During a emergency preparedness drill observed by the inspector on September 18, 1996, the simulator crew made the same error despite remedial training. Training department evaluators had recommended a procedure change in March 1996, to help reduce the susceptibility of operators making this incorrect interpretation but they had not received any feedback on their recommendation.

During review of the annual requalification training curriculum outline, the inspector identified that more simulator training was provided for shift operators than for staff operators. 10 CFR 55.59(a), *Requalification Requirements*, does not distinguish between shift and staff operators regarding participation in the program. Staff operators received one week of simulator training per year. Included in that week was the simulator portion of their annual operating examination. With the annual examination typically being administered on Thursday and Friday, there were actually only three days of simulator training for staff operators. Control room operators received additional training during other weeks based on plant needs such as startups or shutdowns. Updated Final Safety Analysis Report (UFSAR) section 13.2.1.2 states the

retraining will last approximately one week requiring the student to perform each of a list of 26 items. The training department tracked completion of these items using license simulator retraining form OPS-564, "Task Tracking Sheet." The inspector verified that all licensed operators were documented as receiving at least this minimum training.

c. Conclusions

The inspector concluded that the licensee's requalification program complied with the requirements and standards of plant procedures as well as the requirements of 10 CFR 55.59 for the areas inspected. The licensee developed and administered examinations that effectively identified areas in need of improvement. Documentation of remediation was in need of improvement to ensure adequate completion. Although staff operators did not receive as much simulator training time as the shift operators, all operators were found to have completed the minimum requirements.

O6 Operations Organization and Administration

O6.1 Administrative Control of Operator Overtime (71707)

The requirements for control of operator overtime are contained in TS 6.2.2 and FNP-0-AP-64, "Work Schedules for Personnel," Revision 3. The inspector interviewed two shift clerks and reviewed the shift manning and biweekly payroll time records for Crews 1 and 6 for the period July 1 - August 1, 1996. The inspector did not identify any discrepancies with the records or control of operator overtime. There were no instances of excessive overtime. The inspector also reviewed the proposed schedule for the Fall 1996 Unit 2 Outage. The inspector found that the schedule maintained overtime within the requirements of TS 6.2.2. The inspector concluded that operator overtime was adequately controlled and that the records were thorough.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) IFI 50-348, 364/95-12-01, Lack of Measurable Performance Indicators Due to Use of Westinghouse Owners' Group Emergency Response Guideline

This IFI identified that critical tasks were not an objective measure by which the facility evaluators could determine if an individual or crew's performance was satisfactory. Since that inspection, the licensee has revised the critical tasks to provide the evaluator with measurable objectives for determining satisfactory performance. This IFI is considered closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

Inspectors observed and reviewed portions of various licensee corrective and preventative maintenance activities, and witnessed routine surveillance testing, to determine conformance with plant procedures, work instructions, industry codes and standards, TS and regulatory requirements.

a. Inspection Scope (61726 and 62707)

The resident inspectors observed all or portions of the following maintenance and surveillance activities, as identified by their associated work order (WO), work authorization (WA) or surveillance test procedure (STP):

- FNP-2-STP-80.2 — 1C EDG Operability Test
- WA 121388 — 1A CCW HX Epoxy Coating Application
- WA 123723 — 2A CCW HX Epoxy Coating Application
- WO S96001466 — 1A CCW HX Tube Inspection, Cleaning, Repair, Stabilization and Plugging
- WO S96001476 — 2A CCW HX Tube Inspection, Cleaning, Repair, Stabilization and Plugging
- FNP-2-STP-608.1 — Loop A Main Steam Safety Valve Operability Test
- FNP-2-STP-151.5 — MTG Overspeed Test
- FNP-0-ETP-3661 — Control Rod Test And Evaluation Program
- WO S00079525 — Train A CRACS modification
- WO 0463607 — U2 TDAFW Pump (Turbine) lubrication

b. Observations, Findings and Conclusions

All of the aforementioned maintenance work and surveillance testing observed by the inspectors were performed IAW WO instructions, procedures, and applicable clearance controls. No adverse findings were identified. Safety-related maintenance and surveillance testing evolutions were well planned and executed. Responsible personnel demonstrated familiarity with administrative and radiological controls. Surveillance tests of safety-related equipment were consistently performed in a deliberate step-by-step manner by personnel in close communication with the control room. Overall, the craftsmen and technicians appeared knowledgeable, experienced, and well trained for the tasks they performed.

In addition, see the discussion below regarding certain major maintenance activities observed by the resident inspectors (Section M1.2 and 3).

M1.2 WO S96001466 and S96001476, and WA 121388 and 123723, 1A and 2A CCW HX Preparation, Repair, and Epoxy Coating

a. Inspection Scope (62707)

Resident inspectors observed various aspects of the modification activities associated with epoxy coating of the service water inlet and outlet channel heads, tube sheet, and down tube (inlet side only) for the 1A and 2A CCW HX. The work observed included hydroblasting, grit blasting, tube sheet weld repairs, CCW tube stabilization, and the epoxy application. Inspectors also reviewed and verified implementation of applicable WO instructions; WAs; FNP-0-ETP-4418, CCW Heat Exchanger Epoxy Coating Application; and Plastocor Application Specification for tubesheet cladding, inlet end coating, and channel head coating.

b. Observations and Findings

This was a major modification that involved a number of plant employees and contractors for over three weeks. The work on the 1A and 2A CCW HXs was performed in parallel. In general, all observed work was accomplished IAW work instructions and applicable procedures (i.e., ETP-4418 and Plastocor Application Specification). However, several process control and equipment problems were identified.

- Eleven broken/severed tubes in the 2A CCW HX, some with missing sections of tube;
- During application of 2A CCW HX primer inlet coat of epoxy, ambient air and surface temperatures slightly exceeded the established limits;
- During the mixing of one batch of epoxy for the 2A CCW HX, epoxy material temperature slightly exceeded the established limit;
- While being stored at a complex 3 warehouse, ambient air temperature for epoxy materials slightly exceeded the established limit for about four hours; and
- Inadequate control of combustible materials in the CCW HX rooms

Broken, severed, and fragmented tubes in the 2A CCW HX were subsequently stabilized and fenced in as well as possible. Not all tube fragments could be located or secured. A Nonconformance Disposition Report (NDR), including a 10 CFR 50.59 safety evaluation, was issued to address this condition. In this report the licensee concluded that the "failed tubes and missing tube fragments within CCW heat exchanger 2A will not impact the CCW system capability to perform its intended design function or the continued safe operation of the CCW system." [Note, licensee also discovered a number of damaged tubes in the 1C and 2C CCW HXs sometime later.] With regard to the temperature limits that were exceeded during

the application and storage of epoxy material, the licensee requested and received a letter from the epoxy manufacturer confirming that the slightly increased temperatures had insignificant consequences. Furthermore, the licensee confirmed that appropriate adjustments to the curing times, and special application instructions, were implemented to accommodate the increased temperatures.

During the conduct of CCW HX epoxy coating modification activities, the licensee failed to exhibit positive control over the quantities of combustibles in the CCW HX room. More specifically, no attempt was made to minimize the storage and placement of intervening combustibles between redundant service water inlet valves to the CCW HXs during epoxy work on the CCW HXs. Controls were put in place for the 1C and 2C CCW HX work. Subsequent evaluations by the Engineering Support (ES) group confirmed that general fire loadings did not exceed limits established by the fire protection program. However, the program was explicit about maintaining no intervening combustibles between redundant trains. The inspector did note that hourly fire watches were in effect during the duration of work on the A CCW HX, although for different reasons (i.e., Kaowool concerns, see section F2.1). Also, continuous fire watches were in place during those periods when activities required an Open Flame Permit.

c. Conclusions

In general, all observed work was accomplished IAW work instructions and applicable procedures by qualified individuals. The overall process was well controlled in a conscientious and deliberate manner. Application of lessons learned was evident as the licensee progressed from the B, to the A, and then to the C CCW HXs. Problems were appropriately addressed and resolved. The review of CCW HX epoxy process, and NDRs for the fragmented CCW HX tubes, was identified as IFI 50-348, 364/96-09-04, CCW HX Epoxy Coating And Broken Tubes, pending additional review by the inspector.

M1.3 WO S00079525, Tie-In of New CRACS, A Train

a. Inspection Scope (62707)

Resident inspectors observed selected portions of the CRACS modification including: 1) installation of duct blankoffs; 2) removal of old compressor, receiver, and cooling coils; and 3) installation and hookup of new cooling coils. Previous observations of work on the CRACS modification were documented in Inspection Report 50-348, 364/96-03. The CRACS modification was implemented by Design Change Package (DCP) S95-0-8816. Work was performed under WO #S00079525.

b. Observations and Findings

The licensee planned to take the A train CRACS out of service (OOS) on September 5, 1996, to complete modification work. The work was scheduled to take 25 days. The licensee planned to implement a revised TS 3/4.7.7.2 per FOL Amendment No. 119 coincident with taking the A train OOS. Amendment No. 119 waived the provisions of 3.0.4 (as applied to TS 3.7.7.2) during the initial 30 days of implementation of control room cooling design charges. Also, the revised TS adopted the Improved TS surveillance for verification that the CRACS units can remove the design basis accident (DBA) heat loads.

The licensee identified, on September 2, 1996, that the test procedure, FNP-0-ETP-1052, "B Train Control Room Air Conditioning System Test," Revision 0, would not be a valid test as written for the current conditions. The 1B control room pressurization filter unit heaters would not remain energized in test and the outside air temperature was not greater than 85 degrees fahrenheit as required by the test procedure. The licensee submitted Request for Engineering Assistance (REA) 96-1291 to Southern Company Services (SCS) to determine if additional heat was required for the MCR due to reduced outside temperatures to assure the DBA heat load during test conditions. SCS determined that the proposed test conditions (with outside temperatures 70 to 90 degrees fahrenheit) provided heat loads greater than the DBA heat loads. SCS also recommended that the direct current emergency lighting be energized during the test to add conservatism. The licensee subsequently revised Engineering Test Procedure (ETP) 1052 to incorporate SCS's recommendations. The inspectors reviewed the revision to ETP-1052 and the SCS response to REA 96-1291 and determined they were adequate. The licensee performed FNP-0-ETP-1052, Revision 1, successfully on September 7, 1996 and placed the A train CRACS OOS on September 12, 1996.

The modification was completed and A train CRACS was returned to service on September 27, 1996.

On September 27, 1996, during an internal review, licensee personnel identified that locking tabs were tack welded to the cooling coil mounting bolt heads without documented approval from engineering. The licensee found that craft personnel had experienced difficulties with tightening the cooling coil mounting bolts because the bolt head was not accessible with the coils in place. The engineer and craft personnel determined the solution was to tack weld sheet metal locking tabs onto the bolt heads to prevent them from rotating. The engineer discussed this solution with SCS. SCS stated that they did not see a problem with the locking tabs so the engineer incorporated the locking tab installation into the WO. The licensee initiated FNPIR 1-96-263 to document the problem. Mock-up testing was performed to assure that the attachment process had not degraded the mechanical properties of the bolts. The licensee produced a sample set of tab attached bolts using

the same material, welder, etc., as those installed. Testing involved mechanical testing at FNP and metallurgical/nondestructive testing in Birmingham. Test results indicated that there was no adverse effect upon the life of the bolts with the attached tabs. The inspectors reviewed the test results and concurred with the licensee's evaluation.

c. Conclusions

The inspector determined that overall the work was well coordinated and craftsmanship was good. The licensee's responses to the deficiencies were thorough and well thought out.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Steam Generator Integrity Maintenance and Testing

a. Inspection Scope (73753)

Through licensee procedures, programs and associated records the inspector reviewed the history of the Farley Units 1 and 2 SGs.

b. Observations and Findings

Farley 1 and 2 are Westinghouse 3-loop units with series 51 SGs. Each SG contains 3388 U-bend tubes made of Inconel 600. The nominal tube outside diameter is 0.875 inch with a nominal wall thickness of 0.050 inch. In Unit 1, the tubes were expanded full length of the tube-sheet using the Westinghouse Explosive Tube Expansion (WEXTEX) process; in Unit 2, the tubes were expanded using a mechanical hardroll process. Both units have replaced their original anti-vibration bars (AVB) with adjustable 405 stainless bars.

Unit 1 reached initial criticality in August 1977, and to date, has completed thirteen (13) refueling outages. Tube degradation modes of the Unit 1 SGs were as follows:

- Outside Diameter Stress Corrosion Cracking (ODSCC) at Hot Leg Support Plates: (Confirmed by tube pull in 10/89 - R20C26 from SG C.)
- Thinning at Lower Cold Leg Support Plates: (No significant change in percent value since 1986.)
- ODSCC above Hot Leg Tubesheet: (Indications in sludge pile and in free span area to first tube support plate. Confirmed by tube pull in 10/89 - R20C26 from SG C.)
- Pitting above Cold Leg Tubesheet: (Confirmed by tube pull in 10/89 - R21C48 in SG C.)
- Primary Water Stress Corrosion Cracking (PWSCC) at the WEXTEX Hot Leg Tubesheet Transition: (4/91 inspection was first rotating pancake coil at the top of the hotleg WEXTEX transitions. Circumferential and axial indications have

been reported since 4/91. Ultrasonic testing (UTEC) confirmed that all circumferential indications were initiated from the inside diameter of the tube.)

- PWSCC in Low Row U-bends: (Row 1 tube preventatively plugged in 12/81. Row 1 tubes unplugged and Rows 1 & 2 U-bends were heat treated in 4/91.)
- AVB Wear: (Indications represent old wear spots corresponding to locations of original AVB's, which were replaced with adjustable 405 stainless steel AVB's in the 1985 & 1986 outages.)
- ODSCC at Free-Span Locations: (First identified during the 9/92 tube pull (R18C40 - SG B.) No clear eddy current signals at that time. In the 10/95 inspections, eight indications confirmed above the hot leg tubesheet and seven other indications confirmed in other hot leg free-span areas.)

Status of Unit 1 SGs after the 13th refueling outage was as follows:

	SG A	SG B	SG C
Total Inservice Tubes:	3116	3223	3131
Total Inservice Sleeved Tubes:	56	37	115
Total Inservice Sleeves:	67	42	149
Total Plugged Tubes:	272	165	257
Cumulative Plugging Equiv. for Sleeved Tubes:	2.41%	1. 564%	5.212%
Cumulative Plugging Equivalent:	8.10%	4.92%	7.74%
Average Plugging Equivalent (All SGs)		6.92%	

Unit 2 reached initial criticality in May 1981, and to date, has completed ten (10) refueling outages. Tube degradation modes of the Unit 2 SGs were as follows:

- ODSCC at Hot Leg Support Plates: (Confirmed by tube pulls 4/86 - R31C46 and R38C46 from SG C.)
- ODSCC above Hot Leg Tubesheet: (Have not been confirmed by tube pull to date. Minor intergranular attack observed on the outside diameter surface above the tubesheet in 10/90 - R19C48 from SG C.)
- PWSCC at the Mechanical Roll Tubesheet: (Confirmed by tube pull in 4/89 - R16C50 from SG C. Shotpeening was performed in 10/87 and F^* criteria implemented.)
- PWSCC in Low Row U-bends: (Row 1 tubes preventatively plugged in 10/82. Row 1 tubes unplugged and heat treated in 10/90. No indications to date.)

- AVB Wear: (Indications represent old wear spots corresponding to locations of original AVB's, which were replaced with adjustable 405 stainless steel AVB's in the 4/86 & 11/87 outages.)
- Free-Span Locations: (Responsible for plugging of six tubes. Not characterized by a tube pull, but data suggests that the mechanism is most likely ODSCC.)

Status of Unit 2 SGs after the tenth refueling outage was as follows:

	SG A	SG B	SG C
Total Inservice Tubes:	3074	3189	3190
Total Inservice Sleeved Tubes:	77	56	140
Total Inservice Sleeves:	112	58	17C
Total Plugged Tubes:	314	199	198
Cumulative Plugging Equiv. for Sleeved Tubes:	4.04%	2.15%	5.99%
Cumulative Plugging Equivalent:	9.39%	5.94%	6.02%
Average Plugging Equivalent (All SGs)		7.12%	

c. Conclusions

The reviews of the current status, and the history of FNP SGs provided an indication that the licensee has been doing a conscientious job of managing the SG degradation modes as they are identified.

M3 Maintenance Procedures and Documentation

a. Inspection Scope (73753)

The inspector reviewed licensee and contractor procedures for the eddy current inspection of FNP SGs.

b. Observations and Findings

Procedures reviewed included the following:

- Farley Nuclear Plant Surveillance Test Procedure, FNP-2-STP-159.0, "Steam Generator Inspection, Plugging and Repair," Revision 13.

- Farley Nuclear Plant Systems Performance Procedure, FNP-2-SYP-3.0, "SG Data Management," Revision 3.

- Westinghouse Nuclear Services Division Procedure No. MRS 2.4.2 APC-37, "Steam Generator Eddy Current Data Analysis Techniques," Revision 1.

- Westinghouse Nuclear Services Division Procedure No. MRS 2.4.2 APC-38, "Steam Generator Data Management," Revision 1.

- Rockridge Technologies Procedure 42-EC-266, "Data Analysis Procedure For Farley Nuclear Plant Units 1 & 2," Revision 0.

- Rockridge Technologies Procedure 42-EC-267, "Data Management Procedure Farley Nuclear Plant Units 1 & 2," Revision 0.

The procedures reviewed were either new, or very recently revised, procedures. These procedures and/or revisions were prepared as a result of the Unit 2 data management problem identified in LER 50-364/96-002-00 and VIO 50-364/96-03-03. The completion of the procedures and revisions were required to support SG inspections during U2RF11.

c. Conclusions

The licensee and contractor procedures for the evaluation and management of SG eddy current data appear to be adequate for the circumstances.

M6 Maintenance Organization and Administration

a. Inspection Scope (73753)

Through review of documentation and discussions with licensee personnel, the inspector reviewed the management involvement with the SG program.

b. Observations and Findings

SNC intracompany correspondence, dated May 8, 1996, from: D. N. Morey, forwarded, "Farley Steam Generator - Roles and Responsibilities." This memorandum provided documentation of the assigned responsibilities for the various facets of SG management.

The inspector met with SG management personnel from the licensee's corporate office for a presentation of the licensee's long range plans and goals for the Farley SGs. The presentation provided insights into the licensee's plans to systematically recover previously plugged SG tubes by installing sleeves at the locations of the degradation. The presentation also provided various computer models of the projected recovery process, which showed how the recovery and sleeving of plugged tubes could be managed to maintain the plugging levels at or below 7% per unit.

c. Conclusions

The review of the history of the Farley SGs, as discussed in section M2 above, and the discussions with chemistry personnel, as discussed in Section IV, Plant Support of this inspection report, provided indication that the licensee has been managing the degradation of the SGs even though the integrated program for management has not been documented.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) VIO 50-364/96-03-03, Steam Generator Tube Flaws Within F* Distance

The licensee's response dated June 27, 1996, provided a commitment to revise and formalize instructions used by SG inspection data analysts and data managers to ensure compliance with TS requirements. The response also stated that a broadness review was in progress to review FNP's safety related vendor services used to support safety-related activities.

The inspector reviewed the close-out package for Corrective Action Report (CAR) No. 2193, Revision 0. The package contained copies of the signature pages for the SG surveillance and data management procedures which will be used in the up-coming Unit 2 outage. (The inspector also reviewed the individual procedures as described in Section M3 above.)

The CAR package also contained a ten question checklist for use in conducting the broadness review to ensure that other safety related vendor activities are properly controlled. The CAR close-out contained tables showing seventy-nine (79) safety-related vendor-provided, services and procedures that were reviewed during the broadness review for this violation.

M8.2 (Closed) LER 50-364/96-002, Misapplication of Technical Specification 4.4.6 Requirement Regarding F*

Root cause analysis and corrective actions for VIO 50-364/96-03-03, as reported to NRC and described above, are sufficient to close this LER.

M8.3 (Closed) LER 50-364/95-001 and LER 50-364/95-001-01, Steam Generator Tube Degradation and Tube Status

The original LER (95-001) was provided to satisfy TS 4.4.6.5.c which requires that SG tube inspection results which fall in the Category of C-3 shall be considered to be a reportable event and reported pursuant to 10 CFR 50.73 prior to resumption of plant operation. The LER also served to satisfy TS 4.4.6.5.a which requires that following each inservice inspection (ISI) of SG tubes, the number of tubes plugged, repaired or designated F*/L*, in each SG shall be reported to the Commission within fifteen days of the completion of the inspection,

plugging, or repair effort. The revised LER (95-001-01) was issued to show the change in status of six tubes from F* to L*. These LERs are considered closed.

M8.4 (Closed) LER 50-348/95-009, Steam Generator Tube Degradation and Tube Status

This LER was provided to satisfy TS 4.4.6.5.c which requires that SG tube inspection results which fall in the Category of C-3 shall be considered to be a reportable event and reported pursuant to 10 CFR 50.73 prior to resumption of plant operation. The LER also served to satisfy TS 4.4.6.5.a which requires that following each ISI of SG tubes, the number of tubes plugged or repaired, in each SG shall be reported to the Commission within fifteen days of the completion of the inspection, plugging, or repair effort. This LER is considered closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Design Change Control 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 procedures listed below which control design changes and verified that the design control measures were consistent with 10 CFR 50, Appendix B, Criterion III and 10 CFR 50.59. The following procedures were reviewed:

FNP-0-AP-8, Design Modification Control, Revision 22, dated 3/1/96

FNP-0-AP-88, Nuclear Safety Evaluations, Revision 0, dated 2/1/96

From review of the above procedures the inspectors concluded that the following attributes were adequately addressed: design processes, design inputs, interface controls, design verification, document control, post-modification testing, control of field changes, and 10 CFR 50.59 safety evaluations. The inspectors concluded that adequate controls were in place to ensure effective implementation of design changes.

c. Conclusions

The inspectors concluded that the licensee's design change control procedures complied with the requirements of 10 CFR 50, Appendix B, Criterion III, and 10 CFR 50.59.

E1.2 Review and Walkdown of Design Change and Modification Packages

a. Inspection Scope (37550)

The inspectors reviewed the design change and modification packages listed below 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 TS and applicable administrative controls; 3) verify that applicable design bases were included; 4) verify that UFSAR requirements were met.

b. Observations and Findings

The inspectors reviewed the following design change and modification packages:

Design Change	Description
S95-1-8857	Modification on Cable Tray Support No. 427
S95-1-8976	Repair of Main Steam Pipe Support MS-R205
S84-2-2915	Service Water 2" Diameter and Under Piping Replacement
S94-2-8752	Replacement of William Powell Service Water Valves
S95-2-8982	EDG 2B Exhaust Piping Hanger Support Modification
S96-1-9021	Repair of the Unit 1 Auxiliary Building/Containment Cork Interface in Room 186

Design Change numbers S95-1-8857, S95-1-8976 and S96-1-9021 were completed. Design Change numbers S84-2-2915, S94-2-8752, and S95-2-8982 are scheduled to be implemented during U2RF11.

The inspectors found that the DCPs had been reviewed and approved in accordance with the licensee's design control procedures and that the format and content of the design changes were consistent with design control procedures. The quality of the DCPs was good

overall except for the minor discrepancies listed below in the installation drawings for design change S95-2-8982. The discrepancies were as follows:

- No general control dimensions were shown in the drawings.
- No dimensions were given in the drawings for unequal sizes (or dimensions) of structural members such as TS 8X4, L4X3, Plate 4X2, etc. At least one dimension is required to be shown for member orientation so installation matches the design analysis.
- Sheet No. 228B of Support SCS-2H228 should be interchanged with Sheet No. 229B of Support SCS-2H229.
- Section C-C on Sheet No. 228B of Support SCS-2H228 should be rotated 90 degrees to be consistent with Support SCS-2H229.

The licensee's engineers took action to revise the drawings to correct the above discrepancies. The scope of each design change package was found to be adequate. The 10 CFR 50.59 Safety Evaluations were found to be adequate. Except for the discrepancies noted in design change S95-2-8982, the installation instructions were considered adequate to implement the modifications. 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 inspectors walked down the completed modification for design changes S95-1-8857 and S95-1-8976. The inspectors examined the supports and compared the completed modifications with the design drawings. The inspectors found the following discrepancies:

Support No.	Discrepancies
Cable Tray Support 427	DCP Discrepancy: The fillet weld located at inside of the north-west flange for the 5" wide flange post connected to 1/2" top plate was measured to be 3/16". The drawing required 1/4" fillet weld.
Pipe Support MS-R205	Pre-existing Discrepancies: 1) All four pre-existing fillet welds were found to have 3/16" weld size. The drawings showed the weld size to be 1/4". 2) Two fillet welds shown on the drawings did not exist at the top ends of Item 2 connected to Item 1 (both L3x3) (flush condition existed at the back of

the two angles). The fillet welds could not be performed at these locations.

3) Item 4, 1/2"X7" Hilti Kwik anchor bolts, in the Bill of Materials on the drawings shows the number required to be four. The correct number is one.

DCP Discrepancy:

One weld between the 4X4 tube steel and the base plate was not recorded in Weld Data Form WD-010D by the welder and had not been inspected. This weld was required to be recorded and visually inspected per pre-determined weld data form by the modification planner for ISI purpose.

Pre-existing discrepancies refer to those that existed prior to implementation of the design changes (modifications). DCP discrepancies are those that occurred during implementation of the design change. The discrepancies listed above are considered additional examples of VIO 50-348, 364/96-10-01, applicable to Unit 1 only.

In addition, the inspectors also found insufficient groove bevel welds between the bottom plate and the existing 5X5 tube steel for the modification to cable tray support 427. The groove bevel welds should be made flush with the tube steel wall. The inspectors considered this slightly insufficient weld practice to be a weakness in the weld quality and workmanship.

The preliminary investigation for the undersized weld at cable tray support 427 was that this weld was not selected for inspection within the 10 percent weld surveillance sample inspected by the foreman for final acceptance of the weld products. The Weld Data Form WD-010D contained in the work order package and Section 3.15 of Procedure FNP-0-SPP-WD-001, "Documentation of Welding and Related Activities", of FNP Special Process Manual FNP-0-M-23, only requires inspection of 10 percent of the welds completed in each modification, unless engineering specifies additional inspections. The weld at the pipe support MS-R205 was not recorded on the weld data sheet and therefore was not inspected.

c. <u>Conclusions</u>

The above discrepancies, combined with those identified in NRC IR 50-325, 324/96-07, indicates that the licensee's welding inspection program may be deficient.

In general, the modification packages were judged to be of good quality. The modification packages contained sufficient specifications, drawings

and procedures for the installation. Two deficiencies were identified in the areas of the design drawing control and weld quality.

E1.3 Heavy Load Program

a. Inspection Scope (37550)

The inspectors reviewed the licensee's procedures which control the heavy load program.

b. Observations and Findings

The inspectors discussed the Farley heavy load program with licensee engineers and reviewed the current revisions of the procedures used for controlling heavy load lifts and movements. Procedures reviewed were: FNP-0-GMP-6.1, -6.4, -6.6, -57.0, -58.0; FNP-0-MP-11.0, FNP-1-MP-11.4; and FNP-2-MP-11.4. These procedures were used to control the operation, maintenance, inspection, testing, qualification, load paths, and operation of polar and mobile cranes, slings, load cells, lifting devices, crane operators and riggers. Procedure Nos. FNP-1-MP-11.4 and FNP-2-MP-11.4 for the reactor polar crane operations specify safe load paths to limit the load traveling paths in order to prevent the loads from accidently dropping into the reactor fuel and/or on safety-related components.

The slings used for rigging were required to be visually inspected annually and color marked after the inspections. Hoists were required to be load tested annually and color marked also. The inspectors examined hand hoists stored in the cold tool room to verify the hoists were marked with current color coded-red. No discrepancies were found.

c. Conclusions

The inspectors concluded that the procedures were adequate for control and handling heavy loads. The licensee has established adequate procedures for control of heavy loads for plant routine operations and maintenance.

E1.4 Engineering Support (ES) of Large Scale, Complex Evolutions (37551)

The resident inspectors observed several major activities that involved considerable engineering support, oversight, and interface by responsible engineers in the ES and Plant Modifications and Design (PMD) departments. These actvities for the most part were being done for the first time at FNP, and represented complex, resource intensive tasks. ES and PMD involvement was very evident and effective throughout the implementation of these activities:

- Train A CRACS modification

- Augmented Kaowool walkdowns
- 1A and 2A CCW HX epoxy coating

E7 Quality Assurance in Engineering Activities

E7.1 Quality Assurance Assessment and Oversight

a. Inspection Scope (37550)

The inspectors reviewed audits performed by the onsite Safety Audit and Engineering Review group.

b. Observations and Findings

The inspectors reviewed the results of audits of engineering and design activities. Audits reviewed were as follows:

- Audit 94-PMD/09, Plant Changes and Modifications. An audit finding was identified regarding failure to issue as-built notices for evaluation of equivalent parts for procurement. Several examples were identified.
- Audit 95-ISI/29-1 and 95-STP/95-1, Inservice Inspection and Surveillance Testing. An audit finding was identified regarding an engineer who performed acceptance of a containment leak test who was not properly certified to accept and evaluate the results in accordance with licensee procedures.
- Audit 95-ISI/29-2, Inservice Inspection. Two audit findings were identified regarding failure of a vendors performing ISI activities to comply with site procedures. One finding concerned an unqualified individual (a trainee) performing eddy current testing. The other finding concerned improper review of certificates of calibration for equipment used for ISI work.
- Audit 96-STPe/34-1, Engineering Support Surveillance Tests. There were no findings in this audit. Two comments concerning minor procedure discrepancies were included in the audit report.
- Audit 96-CSP/04, Control of Special Processes. An audit finding was identified concerning nine examples of welding inspections which were not performed by independent inspectors. In all cases the foreman in charge of the work performed the weld visual inspections. The licensee's weld inspection program permits weld inspections to be performed by foremen, but not of work they were responsible for. The

weld inspections are known as peer inspections and are not performed by independent quality control inspectors.

c. Conclusions

The inspectors concluded that the audits were useful in providing oversight to management regarding performance of engineering activities. The audit finding regarding non-independent weld inspections is indicative of failure of the maintenance foremen in understanding the licensee's welding inspection program regarding independent inspections. This issue, although it has been corrected, is another example of a deficient weld inspection program (see Section E1.2).

E7.2 Safety System Self Assessment Program

a. Inspection Scope (37550)

The inspectors reviewed the results from the safety system self assessment (SSSA) program.

b. Observations and Findings

The licensee performed self assessments on 13 safety related systems. The assessments were performed by independent teams of individuals with design engineering and operations experience who performed an in depth review of system design and operation. The teams were supplemented with contract personnel experienced in performing these types of assessments. The assessments were performed between 1990 and 1995 and included the following systems: control room ventilation, service water, residual heat removal, emergency diesel generators, reactor protection, safety related electrical distribution, auxiliary feedwater, instrument air, post accident sampling, component cooling, containment isolation, containment spray, chemical and volume control, high head safety injection and accumulators, and reactor cooling water.

Findings from the assessments were reported as strengths or weakness. Weaknesses were identified by an action item which required a response from the plant to resolve. More than 400 weaknesses were identified in the assessments of the 13 systems. These weaknesses resulted in a number of LERs, changes to the UFSAR, changes to design basis calculations, design changes, and changes to operating procedures.

The inspectors reviewed the SSSA results for the auxiliary feedwater, service water control room ventilation, and containment isolation systems. The inspectors also reviewed corrective actions performed in response to weaknesses identified in the SSSAs. The inspectors concluded that the corrective actions were

appropriate to resolve the identified weaknesses. As of the inspection date only six action items remained open to resolve all the weaknesses identified in the 13 SSSAs.

c. Conclusions

The safety system self assessments were an effective program to identify and correct deficiencies in design and operation of the 13 systems assessed. Discussions with the licensee disclosed that a new self assessment program to address balance of plant (non-safety related) systems is currently under review.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Tours of the Unit 1 and 2 Radiologically Controlled Areas (71750)

During the course of the inspection period the resident inspectors conducted numerous tours of the radiologically controlled area (RCA) of the auxiliary building for Units 1 and 2. In general, Health Physics (HP) control over the RCA, and the work activities conducted within it, were good. Material condition and housekeeping in the Unit 1 and 2 RCA were typically well maintained.

R1.2 Review of Water Chemistry Controls and History

a. Inspection Scope (79501)

By walk-down inspections, interviews and document review, the inspectors examined the licensee's primary and secondary water chemistry controls and history to verify compliance with commitments and regulatory requirements.

b. Observations and Findings

The licensee's on-line chemistry monitoring includes: cation conductivity monitors in 12 locations; specific conductivity monitors in six locations; pH monitors in ten locations; sodium monitors in six locations; two hydrazine monitors; and ten dissolved oxygen monitors. In addition the licensee has an in-line ion chromatograph with both units samples being routed over to it. Future plans are to shut down these sample streams and rely upon the SG blowdown analysis, when the Unit 1 streams are connected to the Unit 2 monitor. There were no in-line real time chlorine monitors.

The licensee indicated that they have removed all the copper alloy materials from the secondary side, of both units, with the exception of the aluminum bronze (CA614) condenser tube sheets. As a result of sludge lancing the licensee has removed as much as 1885.5 lbs. of copper

(Unit 1 refueling outage 2), more recently amounts under 300 lbs. were removed. In-line instrumentation reported a total copper transport, for a fuel cycle, at power levels above 30%, to be approximately 10 lbs. per unit. The licensee has not identified any degradation to the aluminum bronze tube sheets. The licensee has not chemically cleaned the SGs. The licensee explains the difference between ten and something less than 300 lbs. to be a redistribution of the circulating load of copper deposited in earlier cycles.

The licensee has adequate procedures to identify, locate, and repair condenser tube leaks.

The licensee's program for SG layup is adequate.

c. Conclusions

The licensee's water chemistry controls were appropriate for the circumstances.

R2 Status of Radiological Protection and Chemistry Facilities and Equipment

R2.1 Monitoring of Primary-to-Secondary Leakage

a. Inspection Scope (79502)

By walk-down inspections, interviews and document review, the inspectors evaluated the effectiveness of the licensee's procedures, equipment, and practices for monitoring primary-to-secondary leakage to verify compliance with commitments and regulatory requirements.

b. Observations and Findings

The licensee's actions related to NRC Bulletin 88-02, NRC Information Notice Nos. 88-99, 91-43 and 93-56 were appropriate.

Primary-to-secondary leakage is monitored by real time N^{16} monitors alarmed and annunciated in the control room at 5 gallons per day. In addition, the licensee takes the following grab samples: gross beta/gamma once per 48 hours; tritium once per month; gaseous leak rate once per month; gamma isotopic once per month; and steam jet air ejector every 31 days, when no leakage is identified. The analysis periodicity is progressively increased when primary to secondary leaks are identified.

The licensee does not perform condensate polishing. As a consequence, the licensee was not concerned with regeneration or disposal of condensate demineralizer resin and the associated effluent.

c. Conclusions

The licensee's current procedures, equipment, and practices for monitoring primary-to-secondary leakage are appropriate.

R3 Radiological Protection and Chemistry Procedures and Documentation

R3.1 Review of Radiological Protection and Chemistry Records and Documentation

a. Inspection Scope (79501)

The inspectors reviewed the TSs, UFSAR and selected procedures to evaluate compliance of licensee's chemistry program with regulatory commitments procedural requirements and industry recommendations.

b. Observations and Findings

Except as noted below, the licensee's procedures are consistent with the TSs, the UFSAR including in process changes, and Electric Power Research Institute (EPRI) TR-102134, Revision 3, PWR Secondary Water Chemistry Guidelines, and EPRI NP-7077, Revision 2, PWR Primary Water Guidelines. Procedures for layup of SG are appropriate.

- EPRI TR-102134, Revision 3, Table 2-1, recommends, during cold shutdown/wet layup (reactor coolant system (RCS) <200°F), once per day dissolved O_2 analysis. The licensee was unable to conduct this analysis due to plant configuration.

- EPRI TR-102134, Revision 3, Table 2-2a recommends, during heatup/hot shutdown (RCS>200°F to 5% reactor power), feedwater be analyzed once daily for $pH_{25°C}$, Dissolved O_2, ppb, and Hydrazine, ppb. The licensee's procedures provided for these analyses but did not provide any periodicity.

- EPRI TR-102134, Revision 3, Table 2-2b recommends, during heatup/hot shutdown (RCS>200°F to 5% reactor power), SG blowdown, be analyzed once daily for Chloride, ppb and Sulfate, ppb. Due to work load considerations the licensee has chosen to conduct these analyses three times per week.

- EPRI TR-102134, Revision 3, Table 3-5b, recommends, with the reactor critical, once per day analysis of Conductivity μS/cm @ 25°C and $pH_{25°C}$, and once per week analysis of Suspended Solids, ppb and Silica, ppb. Due to work load and dose considerations the licensee has chosen to conduct all these analyses once monthly except for $pH_{25°C}$, which they conduct once per week.

- The licensee primary to secondary program was based on EPRI NP-7077, Revision 2. The licensee was currently in the process of

updating their program to Revision 3 dated November 1995. The target completion date was December 31, 1996.

- A review of procedures 1-SOP-69.0 R2, 2-SOP-69.0 R2, CCP-201 R54, 1-ARP-1.6 R28, 2-ARP-1.6 R21, and CCP-31 R18 revealed an inconsistency in the N^{16} monitors set points stated in CCP-31. The licensee made an immediate procedure change to correct the inconsistency. The N^{16} monitors in the field had set points properly set.

- As described in NRC IR 50-348,364/96-02, the inspectors noted a number of wheeled instrument carts, chairs, and work platforms unsecured and unattended in the control room back board area. To address this issue the licensee issued a Night Order dated March 6, 1996, directing personnel to keep wheeled furniture out of the rack area when not in use and to assure that the wheels are locked when these items are in the rack area. During this inspection the inspectors noted several wheeled carts and chairs with wheels not locked or blocked, unattended in the rack area. Apparently the Night Order was ineffectual.

c. Conclusions

The licensee's water chemistry program is in compliance with regulatory requirements and with industry guidelines, with some exceptions.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Review of the Audit History for the Primary and Secondary Water Chemistry Control Programs

a. Inspection Scope (79502)

The inspectors reviewed the last two licensee Chemistry STP audits, the last two biannual Chemistry audits as well as a spot audit in response to EPRI PWR Primary to Secondary Leak Guidelines, to verify compliance with commitments and regulatory requirements.

b. Observations and Findings

Audit findings included weakness related to: alarm set points; control of chemicals; improper response to air sample monitor alarm; improper tag order implantation; shelf life; and consistency with EPRI Guidelines. Appropriate corrective actions were taken or planned.

c. Conclusions

The area of primary and secondary water chemistry was subjected to independent audits, with appropriate action taken for identified weaknesses.

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Emergency Drill (71750)

Resident inspectors observed the conduct of two emergency plan (EP) practice drills on September 11 and 18, and participated in the annual EP dress rehearsal conducted on October 9, 1996.

The inspectors observed licensee emergency response activities in the plant simulator (simulated control room), emergency offsite facility, technical support center, Operations Support Center. The drills and dress rehearsal was well coordinated by the EP staff. Emergency response facilities appeared adequate, with no real significant equipment problems. The emergency response crews were effective in addressing onsite accident conditions and offsite consequences during the drills and exercise. In preparation for the annual exercise on December 11, 1996, the EP staff went to considerable lengths to simulate NRC headquarters and site team play with additional plant employees. This effort added realism, and increased the communication challenges for the response crew, during the drill of September 18, and the dress rehearsal. The inspectors participated in the subsequent drill and dress rehearsal critiques, and provided their observations.

S1 Conduct of Security and Safeguards Activities

S1.1 Routine Observations of Plant Security Measures (71750)

During routine inspection activities, resident inspectors verified that portions of site security program plans were being properly implemented. This was evidenced by: proper display of picture badges by plant personnel; appropriate key carding of vital area doors; adequate stationing/tours of security personnel; proper searching of packages/personnel at the Primary Access Point and SWIS; and adequacy of compensatory measures (i.e., posting of guards) during disablement of vital area barriers. Security activities observed during the inspection period were well performed and appeared adequate to ensure physical protection of the plant. Guards were observed to be alert and attentive while stationed at disabled doors and access covers to critical underground equipment (e.g., SWS valve boxes and FOSTs). Posted positions were manned with frequent relief.

S1.2 Search of Trailers Entering The Protected Area (71750)

On October 10, 1996, a resident inspector observed security guards escort a Westinghouse sludge lance trailer into the protected area that was not searched. The trailer was posted as a RCA. The security guard outside the protected area gate did search the truck, cab, and driver prior to entering the protected area. However, he did not search inside the trailer because he did not have his personnel dosimetry. Also, the shift security supervisor instructed him that a search would not be

necessary based on her communications with a senior HP technician. The inspector also noticed that certain cargo spaces under the trailer which were not part of the posted RCA, were not searched. All the cargo door pad locks had been unlocked, apparently to facilitate a search. Pending the inspectors actions to ascertain additional information on the circumstances surrounding this incident, interview responsible individuals and meet with the Security Chief, this issue is identified as Unresolved Item (URI) 50-348, 364/96-09-05, Failure to Search Contractor Trailer Prior to Entry into the Protected Area.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Installation and Inspection of Kaowool One-Hour Fire Barriers

a. Inspection Scope (71750)

A detailed discussion of the initial inspection findings associated with Kaowool one-hour fire barriers was documented in Section F2.1 of IR 50-348, 364/96-07. Due to resident inspector concerns regarding the adequacy of Kaowool installation practices and independent inspection program, URI 50-348, 364/96-07-03, Inadequate Installation and Inspection of Kaowool Fire Barriers, was identified. Since this initial inspection, the resident inspectors have conducted additional walkdowns of Kaowool installations in the plant, interviewed responsible personnel, reviewed applicable regulatory and FNP program requirements, conducted meetings with plant staff and management, and monitored licensee implementation of compensatory and corrective actions.

b. Observations and Findings

On September 3, 1996, in addition to the discrepancies described in IR 96-07, an inspector identified some cable trays with Kaowool installation deficiencies (flammastic fire seal installation and degradation). During the exit meeting on September 5, the inspectors expressed concerns about problems with Kaowool installations. The licensee promptly establish fire watches to address the immediate concern of adequate fire safety, but did not consider conducting their own inspections to ascertain the scope of the problem.

On September 25, and 30, the inspectors conducted further walkdowns of Kaowool cable tray installations and identified additional installation deficiencies similar to those of September 3. All inspector identified deficiencies were identified to the Operations SS and shift clerk. The shift clerks promptly initiated the appropriate compensatory actions (i.e. fire watches) pursuant to the Fire Protection Program (FPP) described in UFSAR, Appendix 9B. On October 2, the inspectors identified three raceways that were not completely wrapped with Kaowool as depicted by "Safe Shutdown Raceway and Identification of Kaowool Wrap" drawings D-180536, Revision 9, and D-203281, Revision 14. These raceways were BDE-15 and BHF21 in Room 160 (1C Charging Pump power

cables and control wiring) and BDE-15 in room 2159 (2C Charging Pump power cables), and appeared to be part of the licensee's FPP for ensuring safe shutdown capability.

The licensee performed a preliminary engineering evaluation of the raceways with missing Kaowool and informed the inspectors that the drawings were in error and the raceway sections were not required to be wrapped. A further, more detailed review by the licensee determined that raceway BDE-15 (1C Charging Pump power cables) in room 160 was required to be wrapped with a one-hour fire barrier to meet 10 CFR 50, Appendix R requirements of §III.G.2 as described by the UFSAR, Appendix 9B.

On October 2, the inspectors met again with licensee management to discuss the continuing concern regarding the adequacy of Kaowool fire barrier installations throughout the plant. After the meeting, the licensee immediately initiated one-hour roving fire watches in every room of the plant that contained Kaowool. Later that same day, management briefed the inspectors on their Kaowool Action Plan which included: Revising FNP-0-FSP-43, "Visual Inspection of Kaowool Wraps," Revision 5; Training additional personnel to perform comprehensive Kaowool inspections; Performing walkdowns of all Kaowool installations required by the Fire Protection Program for safe shutdown; Evaluating and correcting any identified deficiencies; and updating the FPP and Appendix R Compliance Report as needed.

On October 3, an inspector interviewed one of the two electricians responsible for performing the most recent Kaowool inspection per FNP-0-FSP-43. This inspection had been conducted March 4-7, 1996. The responsible electrician stated that the drawings and raceway metal labels were difficult to read. He also stated that he had never installed or inspected Kaowool before the March 1996 inspections, nor had he received any training, was not knowledgeable of Kaowool installation or design requirements. UFSAR, Appendix 9B, Section 9B.6.1 of the FPP, requires an independent inspection program to verify fire protection systems conform with installation drawings and test procedures. Paragraph 9B.6.1.E, requires that the inspection program includes measures to assure that personnel performing these inspections are knowledgeable in the design and installation requirements for fire protection. The failure to ensure inspection personnel were knowledgeable in the assigned inspection area was identified as an example of an apparent violation (EEI) 50-348, 364/96-09-07, Inadequate Kaowool Inspection Program.

The inspector reviewed FNP-0-FSP-43 to determine if it provided adequate guidance to the personnel performing the inspections. UFSAR, Appendix 9B, paragraph 9B.6.1.F.1 requires that inspection procedures, instructions, and checklists provide identification of characteristics to be inspected. The inspectors found that the procedure only verified that there were no breaks in the continuous run of Kaowool wrap. The

inspectors determined that FNP-0-FSP-43 did not direct the inspection personnel to examine the Kaowool for compression or the flammastic fire seals for proper installation and deterioration. These are important characteristics which ensure the Kaowool was installed, and maintained, IAW original installation design requirements. Inspections conducted by the NRC and the subsequent detailed walkdowns by the licensee identified numerous deficiencies related to these characteristics. This failure of the inspection procedure to identify all necessary design and maintenance characteristics is another example of EEI 50-348, 364/96-09-07, Inadequate Kaowool Inspection Program.

On October 4, the licensee trained approximately 24 Kaowool inspectors and certified them as Level II inspectors to perform inspections of Kaowool installation. The training focused on identification and installation details. It consisted of 2.5 hours of classroom instruction and 1 hour of on-the-job training in the plant. An inspector observed the classroom portion of the training. At the conclusion of the training the inspector observed that the trainees appeared to be confused. During observations by the inspector of some of these personnel performing inspections, this confusion was apparent during their inspections. The inspector also reviewed the proposed inspection plan, ETP-3409, and determined it was adequate.

On October 5, the licensee commenced detailed Kaowool inspections of all installations in the plant. All inspections were coordinated by the ES Performance Review Group. A resident inspector observed three two-person teams during the first four hours of inspection activities. The first team observed by the resident inspector failed to identify an apparent problem with the flammastic seal. This deficiency was on raceway AED454 in Room 2316 which had no flammastic being visible eight inches up the raceway. The resident inspector discussed this oversight with the inspection team and the overall inspection coordinator. The licensee coordinator agreed that this kind of deficiency should be documented for further engineering evaluation. He then contacted each team to ensure they understood this part of the installation criteria and the necessity of documenting all deficiencies. The resident inspector observed two more teams in the field and did not identify any more performance problems. The resident inspector concluded that this comprehensive inspection effort by the licensee should be adequate to identify existing Kaowool installation deficiencies.

The licensee's inspection took about four days to complete and identified the following:

1) The 1B and 1C Charging Pump (B train) power cables and room cooler cables in Room 175 of fire area 1-004 were not fully enclosed in a fire barrier having a 1-hour rating as required 10 CFR 50, Appendix R and the FPP. In these four particular raceways (i.e., BDE-0A, BFDB06, BFDD15, and BHF-36) the Kaowool wrap was missing

for approximately 24 inches between the cable tray and the opposing firewall.

2) Cables for Unit 1 main steam isolation and auxiliary feedwater flow control in raceway BHFC33 that traversed across room 319 of fire area 1-042 were not wrapped by Kaowool. The licensee had failed to install the one-hour fire barrier required by the Appendix R compliance report referenced by the FPP.

3) The licensee verified the resident inspectors finding that 18 feet of raceway BDE-15 carrying power cables for the 1C Charging Pump (B train) in Room 160 of fire area 1-004 was not enclosed in a fire barrier having a 1-hour rating as required by 10 CFR 50. Appendix R and the FPP.

4) Thirty-six deficiency reports (DR) were generated. The DRs were broken down as follows:

Kaowool that has been compressed	21 DRs
Kaowool that is partially missing	5 DRs
Kaowool missing	5 DRs
Kaowool damaged or deteriorated	5 DRs

5) Over 100 instances were found where FNP-0-PMP-507. "Kaowool Installation Procedure," Revision 5, was not strictly followed. PMP-507, step 6.2.8, stated that "In areas such as floors, walls, and ceilings where the blanket wrap ends, fire protection seals shall be installed as specified using mastic coatings such as... The sealant shall be troweled completely around the wrapped cable tray at the floor, walls, or ceiling. The seals shall be not less than 1/4" thick and extend not less than 8" onto the Kaowool and not less than 8" onto the floor, wall or ceiling." The licensee inspection identified numerous junctions where the flammastic was not troweled for 8" completely around the Kaowool wrapped cable tray and/or did not extend 8" onto the floor, wall or ceiling. In many instances, the flammastic was also cracked, damaged, or indeterminate due to the Zetex outer wrap.

FOL NPF-2, Condition 2.C(4), and FOL NPF-8, Condition 2.C(6), prescribes that Southern Nuclear shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR, Appendix 9B. Items 1) through 3) above represent examples where the licensee failed to install one-hour fire barriers as specified by the 10 CFR 50, Appendix R program described in the FPP. These noncompliant conditions are identified as EEI 50-348/96-09-06, Failure to Install Required One-hour Fire Barriers.

Items 4) and 5) above, are additional performance-based examples of the inadequacy of the licensee's independent inspection program to verify Kaowool fire-barriers properly installed and maintained in the plant.

Section 9B.6.1 of the FPP, requires an independent inspection program to verify fire protection systems conform with installation drawings and test procedures. Fire Surveillance Procedure, FNP-0-FSP-43, "Visual Inspection of Kaowool Wraps," Revision 5, provided the acceptance criteria, instructions, and references for installation details for conducting inspections of Kaowool wraps used to provide the 1-hour rated fire barriers prescribed by the FPP. The number of longstanding deficiencies identified in the ETP-3409 inspection plan demonstrated that the Kaowool inspection program was ineffective. This is another example of EEI 50-348, 364/96-09-07, Inadequate Kaowool Inspection Program.

A resident inspector also performed reviews of the Kaowool Qualification testing documentation which the licensee provided in response to questions regarding what configuration was required for Kaowool terminations at walls and ceilings and the effects of uninsulated conduits and support penetrating the Kaowool wraps. The inspector was not able to conclude that plant configurations were within the scope of the tested configuration based on the documentation provided by the licensee. The qualification test configurations consisted of a Kaowool wrapped raceway and conduit extending through a catenary furnace. In all cases the Kaowool wraps extended twelve inches past the ends of the furnace. The furnace openings were then sealed with Kaowool and firebrick dust. These tests do not appear to reflect the configuration of a Kaowool wrap butting against a fire rated barrier, nor penetrating conduits and supports, which are used throughout the plant. The tests indicate that any gaps in the Kaowool wrap will significantly degrade its effectiveness. This issue is identified as URI 50-348, 364/96-09-08, Adequacy of Kaowool Qualification Tests to Scope Installed Configurations. Resolution of this item will require additional review of the Kaowool Qualification test report and inspection of plant specific configurations by the NRC.

c. Conclusions

The inspectors identified two apparent violations regarding 1 hour rated fire barriers. One apparent violation was for failure to install required one-hour fire barriers. The second apparent violation was for a failure to have an adequate inspection program for Kaowool fire barriers. The inspectors also opened URI 50-348, 364/96-09-08, Adequacy of Kaowool Qualification Tests to Scope Installed Configurations, pending further NRC review.

F5 Fire Protection Staff Training and Qualification

F5.1 Fire Brigade Drill

a. Inspection Scope (71750)

On September 30, 1996, a resident inspector observed the actions of the dayshift fire brigade during a scheduled drill.

b. Observations and Findings

Fire protection training personnel notified the control room of a simulated fire at the onsite Water Treatment Facility. The dayshift fire brigade mustered at the emergency response van and drove to the Water Treatment Facility towing the fire hose trailer. Fire brigade members donned appropriate protective clothing, including self-contained breathing apparatus, and laid out the necessary fire hoses from the closest hydrant station to the simulated fire. Brigade members, under direction of the brigade leader then demonstrated appropriate fire fighting techniques. Afterwards, a critique of the drill was conducted by the drill director with the entire brigade.

c. Conclusions

Fire brigade response was timely. Fire fighting equipment was in good condition. Brigade member actions demonstrated proficiency in fire fighting capability. The drill scenario was adequate.

F8 Miscellaneous Fire Protection Issues (71750)

F8.1 (Closed) URI 50-348, 364/96-07-03, Inadequate Installation and Inspection of Kaowool Fire Barriers

This URI is closed based on the written discussion and the EEIs identified in Section F2.1.

V. Management Meetings and Other Areas

X1 Review of UFSAR Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the 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 inspections discussed in this report, the inspector reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with observed plant practices, procedures and/or parameters. Certain exceptions were identified as follows:

- UFSAR Appendix 9B, Attachment B, 10 CFR 50 Appendix R Exemptions, Section 29.2 states "intervening combustibles between redundant service water valves for CCW are minimal, consisting of primarily of cable insulation." Licensee failed to control the storage and placement of intervening combustibles between redundant SW inlet valves to the CCW HXs during epoxy work on the 1A, 2A, 1B and 2B CCW HXs. Positive controls were put in place during work on the 1C and 2C CCW HXs. Refer to section M1.2.

- UFSAR Appendix 9B, Attachment B, 10 CFR 50 Appendix R Exemptions, described Kaowool wraps which should have been installed but were actually missing. Refer to section F2.1.

X2 Exit Meeting Summary

The resident inspectors presented the inspection results to members of licensee management on October 17, 1996, after the end of the inspection period. The licensee acknowledged the findings presented.

The resident 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

W. Bayne, Chemistry/Environmental Superintendent
R. Coleman, Maintenance Manager
P. Crone, Training Supervisor
S. Fulmer, Technical Manager
H. Garland, Assistant Maintenance Manager
D. Grissette, Operations Manager
R. Hill, General Manager - Farley Nuclear Plant
C. Hillman, Security Chief
R. Martin, Superintendent Operations Support
M. Mitchell, Health Physics Superintendent
C. Nesbit, Assistant General Manager - Support
J. Odom, Superintendent Unit 1 Operations
J. Powell, Superintendent Unit 2 Operations
R. Rogers, Supervisor, Engineering Support
L. Stinson, Assistant General Manager - Plant Operations
J. Thomas, Engineering Support Manager

B. Yance, Plant Modifications and Maintenance Support Manager
W. Warren, Engineering Support Supervisor - Performance Review
G. Waymire, Safety Audit and Engineering Review Site Supervisor
L. Williams, Training and Emergency Planning Manager

NRC

J. Zimmerman, NRR Project Manager - Farley Nuclear Plant

INSPECTION PROCEDURES USED

IP 37550:	Engineering
IP 37551:	Onsite Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71001:	Licensed Operator Requalification Program Evaluation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 79501:	PWR Water Chemistry Control and Chemical Analyis - Audits
IP 79502:	Plant Systems Affecting Plant Water Chemistry
IP 73753:	Inservice Inspection
IP 92901:	Followup - Operations
IP 92902:	Followup - Maintenance
IP 92904:	Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

Type	Item Number	Status	Description and Reference
VIO	50-348, 364/96-09-01	Open	Multiple Valve Misalignments By System Operators (Section O1.5)
NCV	50-348, 364/96-09-02	Open	Untimely Incorporation of TS Amendment Into Plant Procedures (Section O3.1)
IFI	50-348, 364/96-09-03	Open	Inconsistent Application of Remedial Training Documentation Guidance (Section O5.1)
IFI	50-348, 364/96-09-04	Open	CCW HX Epoxy Coating And Broken Tubes (Section M1.2)

URI	50-348, 364/96-09-05	Open	Failure to Search Contractor Trailer Prior to Entry into the Protected Area (Section S1.2)
EEI	50-348/96-09-06	Open	Failure to Install Required 1-hour Fire Barriers (Section F2.1)
EEI	50-348, 364/96-09-07	Open	Inadequate Kaowool Inspection Program (Section F2.1)
URI	50-348, 364/96-09-08	Open	Adequacy of Kaowool Qualification Tests to Scope Installed Configurations (Section F2.1)

Closed

Type	Item Number	Status	Description and Reference
IFI	50-348, 364/95-12-01	Closed	Lack of Measurable Performance Indicators Due to Use of WOG ERG (Section O8.1)
URI	50-348, 364/96-07-03	Closed	Inadequate Installation and Inspection of Kaowool Fire Barriers (Section F8.1)
NCV	50-348, 364/96-09-02	Closed	Untimely Incorporation of TS Amendment Into Plant Procedures (Section O3.1)
VIO	50-364/96-03-03	Closed	Steam Generator Tube Flaws Within F_* Distance (Section M8.1).
LER LER	50-364/95-001 & 50-364/95-001-1	Closed Closed	Steam Generator Tube Degradation and Tube Status (Section M8.3).
LER	50-348/95-009	Closed	Steam Generator Tube Degradation and Tube Status (Section M8.4).
LER	50-364/96-002	Closed	Misapplication of Technical Specification 4.4.6, Requirement Regarding F^* (Section M8.2).

LIST OF ACRONYMS USED

ARP	Annunciator Response Procedure
AVB	Anti-Vibration Bar
CAR	Corrective Action Report
CCP	Chemistry-Radiochemistry Procedure
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CRACS	Control Room Air Conditioning System
DBA	Design Basis Accident
DCP	Design Change Package
DR	Deficiency Report
EDG	Emergency Diesel Generator
EEI	Escalated Enforcement Item
EP	Emergency Plan
EPRI	Electric Power Research Institute
EPB	Emergency Power Board
ES	Engineering Support group
ETP	Engineering Test Procedure
F^*	A TS-defined SG tube acceptance criteria
FHP	Fuel Handling Procedure
FNP	Farley Nuclear Plant
FNPIR	Farley Nuclear Plant Incident Report
FOL	Facility Operating License
FOST	Fuel Oil Storage Tank
FPP	Fire Protection Program
HP	Health Physics
HX	Heat Exchanger
IAW	In Accordance With
IFI	Inspector Followup Item
lbs.	Pounds
IP	Inspection Procedure
IR	Inspection Report
ISI	Inservice Inspection
JPM	Job Performance Measure
L^*	A TS-defined SG tube acceptance criteria
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MCB	Main Control Board
MCR	Main Control Room
MTG	Main Turbine Generator
NCV	Noncited Violation
NDR	Nonconformance Disposition Report
NIS	Nuclear Instrumentation System
N^{16}	Nitrogen 16 isotope
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
O_2	Gaseous Oxygen
ODSCC	Outer Diameter Stress Corrosion Cracking
OOS	Out of Service

PWSCC	Primary Water Stress Corrosion Cracking
PDR	Public Document Room
pH	The negative logarithm of the hydrogen concentration.
$pH_{25°C}$	pH determined at 25°C
ppb	Parts Per Billion
PM	Project Manager
PMD	Plant Modifications and Design group
PMP	Plant Maintenance Procedure
PWR	Pressurized Water Reactor
RCA	Radiologically Controlled Area
RCS	Reactor Coolant System
REA	Request For Engineering Assistance
SCS	Southern Company Services
SFP	Spent Fuel Pool
SG	Steam Generator
SGFP	Steam Generator Feed Pump
SNC	Southern Nuclear Operating Company
SO	System Operator
SOP	System Operating Procedure
SRO	Senior Reactor Operator
SRST	Spent Resin Storage Tank
SS	Shift Supervisor
SSSA	Safety System Self Assessment
STP	Surveillance Test Procedure
SW	Service Water
SWS	Service Water System
SWIS	Service Water Intake Structure
T_{avg}	Average Reactor Coolant System Temperature
T_{ref}	Reference Program Temperature
TDAFW	Turbine Driven Auxiliary Feedwater
TO	Tag Order
TS	Technical Specifications
U2RF11	Unit 2 eleventh refueling outage
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UTEC	Ultrasonic Testing
VCT	Volume Control Tank
VIO	Violation
WO	Work Order
WEXTEX	Westinghouse Explosive Tube Expansion