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

Report Nos.: 50-348/95-20 and 50-364/95-20

Licensee: Southern Nuclear Operating Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

Docket Nos.: 50-348 and 50-364 License Nos.: NPF-2 and NPF-8

Facility Name: Farley Nuclear Plant, Units 1 and 2

Inspection Conducted: November 26 through December 24, 1995

Inspectors: _____ 1/23/96
T. M. Ross, Senior Resident Inspector Date Signed

FOR _____ 1/23/96
M. A. Scott, Resident Inspector Date Signed

_____ 1/23/96
W. M. Miller, Reactor Engineer Date Signed

_____ 1-23-96
J. L. Kreh, Emergency Preparedness Inspector Date Signed

Approved by: _____ 1/23/96
P. H. Skinner, Chief Date Signed
Reactor Projects, Branch 2
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted onsite in the functional areas of plant operations, maintenance/surveillance, engineering/technical support and plant support. The inspection included a review of nonroutine events and a follow-up of previous inspection findings. Backshift inspections were conducted on November 28, and, December 13 and 14, 1995.

Results:

Operations

Operations personnel and management maintained good control over routine full power operation of units 1 and 2, both units operated well. Shift operators remained attentive to changing plant conditions, and were very knowledgeable of plant status and ongoing activities. Operator response to the unit 2 reactor trip was exemplary. An unresolved item (paragraph 4.b.3) was

identified regarding a mode change during the subsequent Unit 2 startup while only one nuclear instrumentation system (NIS) source range channel was operable. Cold weather preparations were conducted in a timely and effective manner to accommodate subfreezing temperatures. Overall housekeeping and physical conditions of unit 1 and 2 continued to improve. Although progress was slow (especially for painting), it was consistent and methodical. Certain areas like the service water intake structure appeared to degrade considerably and need additional attention. Slow response by operations to tripped clappers in the nonradiological side of the auxiliary building resulted in the unnecessary spread of water on various levels for many days. Numerous areas of the radiologically controlled area (RCA) were poorly lit due to burned out lights. Even though the quantity of incident reports increased considerably, there was a dramatic reduction in the number of formal root cause investigations conducted during the last half of 1995. Root cause program effectiveness was identified as an inspector followup item (paragraph 3.b).

Maintenance/Surveillance

Maintenance and surveillance test activities were generally performed in accordance with work order instructions, associated procedures, and applicable clearance controls. Responsible personnel demonstrated familiarity with administrative and radiological controls. Surveillance tests were routinely performed in a deliberate step-by-step manner by knowledgeable plant personnel. Safety-related maintenance and testing evolutions were generally well planned and executed. Two incidents occurred during surveillance-related activities that involved personnel errors. In one instance, operations did not perform a leak test of the unit 2 reactor coolant system within the time required by technical specifications (TS) (paragraph 4.b.1). This was identified as a noncited violation. In the second instance, instrumentation and control technicians failed to reconnect the drawer cable to the NIS intermediate range detector NI-36 (paragraph 4.b.3). This was discovered during the unit 2 startup and was identified as a violation of TS requirements.

Engineering/Technical Support

Overall engineering and technical support of operations, maintenance, modification, and surveillance activities was good. Onsite engineering continued to interface well with the corporate office, and maintained a consistently proactive posture in addressing evolving plant issues.

Plant Support

Health physics (HP) personnel provided good support of unit 2 steady-state operations and the unit 1 startup. Although final cleanup of the unit 1 and 2 radiological control area proceeds slowly, it was consistent. Personnel entry into the protected area was well controlled at the primary access point. Security personnel were consistently alert and implemented the site's security plan in an appropriate manner, with one exception. Physical checks of designated vital areas were not performed per the security plan (paragraph 6.e.3). This concern was identified as an unresolved item last resident inspector report and will be closed next report. Fire protection features

were adequately maintained, or adequate compensatory measures were implemented. In tne case of the unit 1 containment where automatic fire detection capability has been entirely disabled, the licensee is pursuing other possible compensatory measures. An unresolved item was identified regarding unsealed conduits that penetrate fire walls of combustible storage areas (paragraph 6.a). Emergency preparedness, planning and response capabilities were exercised during a dress rehearsal on December 7 and during the annual full scale exercise of December 13. The drill scenarios were challenging, well crafted, and controlled. Emergency response organization personel met all established objectives and performed extremely well. Followup critiques demonstrated a healthy self-critical attitude and generated positive lessons learned.

REPORT DETAILS

1. PERSONS CONTACTED

Southern Nuclear Operating Company Employees:

W. Bayne, Chemistry/Environmental Superintendent
B. Bell, Electrical Maintenance Superintendent
*C. Buck, Technical Nuclear Manager
*R. Coleman, Maintenance Manager
*L. Enfinger, Plant Administration Manager
*J. Fitzgerald, Contracts Coordinator - Plant Mods and Maintenance Support
H. Garland, Mechanical Maintenance Superintendent
*S. Gates, Team Leader - Maintenance Performance Team
D. Grissette, Operations Manager
C. Hillman, Security Manager
*R. Hill, General Manager - Farley Nuclear Plant
R. Johnson, Instrumentation and Controls Superintendent
J. Kale, Maintenance Engineering Support Group Supervisor
W. Lee, SNC Corporate Emergency Preparedness Coordinator
M. Mitchell, Health Physics Superintendent
R. Monk, Engineering Support Supervisor - Equipment Evaluation
*C. Nesbitt, Assistant General Manager - Plant Support
J. Odom, Superintendent Unit 1 Operations
*J. Powell, Superintendent Unit 2 Operations
*L. Riley, Performance Review Group Engineer - Engineering Support
*L. Stinson, Assistant General Manager - Plant Operations
*J. Thomas, Engineering Support Manager
*B. Yance, Plant Modifications and Maintenance Support Manager
R. Vanderbye, Emergency Preparedness Coordinator
W. Warren, Engineering Support Supervisor - Performance Review
*G. Waymire, Safety Audit and Engineering Review Site Supervisor
*L. Williams, Training/Emergency Preparedness Manager

NRC Personnel:

*T. Ross, Senior Resident Inspector
*M. Scott, Resident Inspector
*J. Bartley, Project Engineer

*Attended the exit interview

During the course of this inspection a number of other licensee employees were contacted that work for HP, operations, technical, engineering, security, maintenance, I&C, and administrative departments.

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

2. PLANT STATUS AND ACTIVITIES

a. Unit 1 and 2 Status:

Unit 1 operated continuously at full power for the entire inspection report period.

Unit 2 began the inspection report period operating at full power. On November 28, the unit experienced an automatic reactor trip while changing out a printed circuit card in the DEHC system. Unit 2 was returned to full power operation on December 2. The unit remained at full power for the rest of the inspection period, except for two minor downpowers to 89% in order to modify RTDs on both circulating water pumps.

b. Other NRC Inspections/Meetings:

1) During the week of December 4, NRC Region II inspector W. Miller provided site coverage while both resident inspectors were offsite. He conducted elements of the core inspection program and review of several inspection open items.

2) On December 12 and 13, 1995, NRC Region II inspector J. Kreh was onsite to observe final preparations for, and conduct of, the 1995 annual exercise of the FNP emergency plan.

3. OPERATIONS

a. Plant Operations (71707)

1) Routine Plant and Facility Tours

General tours of FNP facilities were performed to verify that regulatory, operating license and plant procedural requirements were being met. These tours were performed on both dayshift and backshifts to ensure the conduct of site activities were adequately performed, and plant systems and equipment were maintained at acceptable levels.

The inspectors conducted frequent tours of the control room to monitor annunciator alarm status; review selected logs, reports, and tagouts; and walked-down the MCBs and back panels. The inspectors also monitored CR demeanor, staffing, access, shift turnovers and operator performance during routine and transient operations.

Limited walkdowns of accessible portions of safety-related structures, systems and components were also performed in the following specific areas:

a. SWIS
b. Unit 1 and 2 EDGs 1-2A, 1B, 2B, 1C and 2C
c. Unit 1 and 2 Charging (HHSI) pump rooms
d. Unit 1 and 2 piping penetration rooms (100 and 121 ft. elev.)
e. Unit 1 and 2 electrical penetration rooms (139 ft. elev.)
f. Control room and auxiliary building HVAC spaces
g. Unit 1 and 2 Battery rooms
h. Unit 1 AFW pump rooms
i. Unit 1 and 2 SFP, heat exchanger, and pump rooms
j. Unit 1 and 2 PRF rooms

k. Unit 1 and 2 primary sampling and counting rooms
l. Turbine building
m. Primary Access Point

Breaker/switch positions and valve line-ups for safety-related systems were verified, both locally and in the CR, for consistency with operability requirements. The inspectors observed that very few MCB and EPB annunciators were in an alarm condition for any extended period. The inspectors routinely observed only a few annunciators in alarm at any one time for the entire control room. However, the inspectors have noticed that one or two annunciators on the Unit 1 and 2 MCBs have been persistently in alarm preventing the control room from achieving "blackboard." In the past, either or both unit MCBs and the EPB were frequently blackboard. The number of MCB deficiencies continued to remain low, the aggregate number for the entire control room being about 20.

In general, material conditions and housekeeping for both units were acceptable. Significant progress was observed in the cleanup of both units (especially Unit 1) following the completion of U1RF13. However, plant physical conditions and housekeeping were still significantly worse than they were early last summer. Although, almost all plant areas were free of debris and abandoned tools/equipment, cleanliness and physical conditions of many auxiliary building areas appeared well worn and used. Stained floors and chipped paint dominate the appearance of the 121 and 100 foot elevation PPRs, the exception being the Unit 2 PPR at elevation 100 which looked exemplary. Several minor problems (e.g., packing and oil leaks, excessive corrosion, equipment deficiencies) were reported to the responsible on-shift SS and/or maintenance management for resolution. The inspectors also discussed the overall physical condition of both units and the slow rate of improvement with senior plant management, especially the Technical Manager.

In addition to housekeeping, the inspectors noticed a significant wide spread degradation in plant lighting and water/moisture intrusion as described below.

Excessive Moisture and Leakage

The presence of moisture in the units was especially noticeable this inspection period. Due to frequent rain, FP system changes, and component leaks a considerable amount of water and moisture were observed during routine tours. This was evidenced as follows:

Unit 1 FP panels had an electrical disturbance (FNPIR 1-95-349, Pyro Panel tripped for no apparent reason) that tripped clappers at various fire stations on December 15. The licensee did not begin to reset the clappers until late December 20. During the interim, water dripped profusely from the flooded (normally dry) fire suppression piping at multiple locations in the non-rad auxiliary building and spread out over the floors. The 1A-62 station in the Unit 1 CCW room

was in constant alarm for five days while the clappers were tripped. The onshift SS was notified several times of the persistent alarm by the inspectors

Due to high humidity conditions, room coolers in many rooms of both units were observed blowing considerable quantities of condensed water droplets into the spaces being cooled. This was observed in the Unit 1 and 2 125 VDC bus and inverter rooms, the space outside the Unit 2 battery room, Unit 1B AFW pump room, Unit 1 CCW space, and non-rad hallways outside 4160 VAC breaker rooms. Additionally, room cooler drain piping for the above spaces was not able to pass the high condensate flow so drip trays were overflowing. The licensee efforts to control and/or catch the leakage and airborne condensate in the vicinity of electrical equipment appeared to be adequate.

Water leakage at the SWIS was very evident. An eight inch diameter blowdown line off the 2A SW strainer had a minor through wall leak that was isolatable from the safety portion of the SWS piping. Also, the 2B SW strainer was out of packing adjustment. The strainer's gland had heavy leakage that was running over the strainer body and adjacent piping. Overall, leakage from these sources had covered a large portion of the lower level SWIS pit floor.

Plant Lighting in the RCA

During routine tours of the RCA, inspectors noticed a large number of burned out ceiling lights. High traffic hallways were typically well lit, but many rooms had one or more of their lights out which for most rooms did not present a problem. In a number of Unit 1 and 2 areas the lighting was considerably diminished or nonexistent (e.g., SFP rooms, SGBD spaces and radioactive equipment tool storage on the 130 foot elevation, and portions of the PPR's and electrical penetration rooms). The inspectors estimated on the order of a 100 ceiling lights were burned out. Also, there was at least one incident (FNPIR # 1-95-296) involving an electrician opening the wrong breaker for which poor lighting was blamed.

The licensee had implemented a relamping program many months ago, in which employees were requested to call plant extension 2852 (i.e., "BULB") for reporting any burned out lights. Subsequent discussions with the EM Superintendent indicated that the BULB program was basically caught up and he was surprised to hear about the large number of burned out RCA lights. The inspectors can only conclude that many plant employees are not reporting burned out lights, which severely limits BULB program effectiveness. Once informed about the RCA lighting problems, an aggressive relamping effort was launched by the maintenance department.

2) Plant Tagout Orders

During the course of routine inspections, the following tagorders and associated equipment clearance tags were examined by the inspectors:

- TO# 95-3973-0; 2C EDG "B" air compressor
- TO# 95-3774-2; 2K 600V Station Service Transformer
- TO# 95-3792-2; 2S 600V Station Service Transformer
- TO# 95-3784-1; 1L 600V Station Service Transformer

These tagorders were properly implemented and the inspectors did not identify any problems.

3) Technical Specification LCO Compliance

Selected TS LCO status sheets were reviewed on a regular basis in order to confirm that entries into action areas were recognized, tracked, and in compliance. Aside from the problems noted in paragraph 4.b.1, no problems were identified.

4) Unit 2 Automatic Reactor Trip (93702)

On November 28, Unit 2 experienced an automatic reactor trip from 100% power when the MTG tripped due to a total loss of the DEHC system OPC feature. Loss of overspeed protection was caused by a momentary disruption of internal DEHC power during the online changeout of a circuit board. Resident inspectors arrived in the control room within minutes of the reactor trip to monitor operator actions and plant equipment response. Operator performance was excellent and plant equipment operated as expected with only two exceptions. The letdown orifice isolation valves (HV-8149A and B) failed to go close when pressurizer level dropped below the setpoint for letdown isolation due to a faulty relay; however, this did not prevent letdown from isolating because the principal letdown isolation valve went closed per design. In addition, intermediate range NIS channel NI-36, which had been declared inoperable earlier due to abnormally low readings at power, was confirmed to be faulty when it failed to track with NI-35. The inspectors reviewed FNPIR #2-95-334 which documented the licensee's investigation, and conducted independent interviews of ES management and computer technicians who were responsible for the circuit board changeout.

Two days prior to the reactor trip, the DEHC system had suddenly transferred overspeed protection control from the primary OPC (i.e DROP 2) to the backup OPC (i.e. DROP 52) for no apparent reason. In order to troubleshoot the problem, the licensee decided to changeout two of the DPU circuit boards for DROP 2 so they could be bench tested. During this changeout of circuit boards in the DEHC I/O chasis, the DPU for DROP 52 was aligned as the primary OPC while DROP 2 was shutdown for replacement. The first circuit board was replaced online without incident. While the second DPU circuit board for DROP

2 was being replaced, Unit 2 experienced an automatic turbine/reactor trip due to a loss of both OPC channels. Subsequent investigations by licensee confirmed that a momentary power fluctuation occurred when the new second card was being inserted which interrupted the I/O data processing of the operating OPC DPU (i.e., DROP 52). This interruption of DROP 52 coincident with the offline DROP 2 was viewed by the DEHC system as a loss of main turbine overspeed protection.

The vulnerability of the DEHC design to DPU data processing interruptions during online card replacements had been previously identified by the vendor due to similar events at other plants in 1989. After those events, the vendor had developed a circuit board design change to correct the problem, but had failed to notify FNP of the proposed design change via the Vendor Technical Information Program or turbine generator business team correspondence. And even though the licensee had conferred at length with vendor experts prior to changing out their OPC circuit boards at power, these experts failed to recognize that the current FNP DEHC configuration had not incorporated the proposed circuit board design changes and was still very susceptible to I/O bus interruptions during online card replacement.

Since the Unit 2 reactor trip of November 28, printed circuit cards were replaced in the Unit 2 DEHC cabinet with cards that have the latest hardware design change. Also, the DPU circuit cards for DROP 2 and 52 were replaced as originally planned. Unit 1 cards are scheduled to be upgraded during the next outage of sufficient duration. Furthermore, the vendor has been requested to review the upgrade history of all DEHC cards.

5) Severe Cold Weather Preparations

An inspector examined licensee implementation of the recommendations in Appendix 1 of AOP-21, Severe Weather, for protecting plant systems from sub-freezing temperatures. On several days, site temperatures dropped into the twenties (fahrenheit) during the night. An inspector discussed cold weather preparations with Operations and Maintenance management, reviewed completed WOs, and independently verified a number of the preventive measures. The inspector concluded that licensee actions were effective and consistent with AOP guidelines.

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

The inspectors routinely reviewed all FNPIRs initiated during the inspection period to ensure that plant incidents that effect or could potentially effect safety were properly documented and processed IAW FNP-0-AP-30, "Preparation and Processing of Incident Reports ...". The inspectors also reviewed a number of completed FNPIRs to determine licensee's effectiveness in: 1) identifying/describing problems; 2) elevating problems to the proper level of management; 3) conducting

problem/root-cause analysis and/or derivation; 4) assessing operability and reportability; 5) developing appropriate corrective actions and 6) evaluating cause/corrective action scope for generic implications. The following is a list of some of the more significant completed FNPIRs reviewed by the inspectors:

- FNPIR 2-95-145, 2A SW pump trip
- FNPIR 1-95-151, RMWST Overflow
- FNPIR 1-95-219, 1-2A EDG trip
- FNPIR 1-95-231, 1B reactor coolant pump motor stator temperature alarm
- FNPIR 1-95-272, 1C Containment cooler breaker would not open
- FNPIR 1-95-287, 1B MFW wet recirculation valve pin sheared
- FNPIR 1-95-296, Electrician opened wrong breaker
- FNPIR 1-95-301, Carpet tiles installed without PORC approval
- FNPIR 1-95-316, Damaged 1B atmospheric relief valve supports
- FNPIR 1-95-341, SWS MOV thermal overloads opened

Overall, the inspectors concluded the licensee's program for identifying and resolving problems was effective, and being accomplished IAW AP-30. Plant personnel exhibited an appropriate threshold for identifying problems and initiating FNPIRs. Each FNPIR received prompt management attention. In the examples listed above, resolution of identified problems by "direct derivation" were assigned to knowledgeable individuals of the responsible organization; none of the FNPIRs reviewed involved a formal root cause investigation. FNPIR corrective actions were generally comprehensive and effective.

Formal Root Cause Analysis

Based on discussions with ES personnel and review of available information, an inspector determined that there was a dramatic reduction in the number of formal root cause investigations performed during the last half of 1995 even though the quantity and significance of incident reports did not decline. From January 1 through June 30, 1995, nineteen formal root cause investigations were initiated out of 164 FNPIRs, whereas from July 1 through December 31 only five root cause investigations were initiated out of 193 FNPIRs. During the second six months of 1995, the number of FNPIRs increased by 18% while the number of root cause investigations decreased by 74%. The distribution of significant FNPIRs did not appear to change appreciably.

Formal root cause investigation teams are activated primarily on incident significance level per Section 5.0 of ACP-9.0, Root Cause Program. Program effectiveness reviews required by Section 8.2 of ACP-9.0 are performed IAW Section 3.2.8 of AP-30 by SAER about every two years. This biannual audit is an overall review of the Incident Report Program effectiveness, of which formal root cause analysis is a small part. Currently, there does not appear to be any administrative guidelines or procedural requirements for evaluating on a real time basis the effectiveness of formal root causes and/or broadness reviews to accurately identify common causes and implement broad-based

corrective actions to prevent recurrent problems such as persistent personnel errors and BOP challenges. The process for selecting and activating root investigations is almost always reactive and rarely proactive. Furthermore, there is no apparent internal feedback loop for optimizing the number of root cause investigations needed to be performed. The inspector will continue to followup these performance issues as IFI 50-348, 364/95-20-01, Root Cause Program Effectiveness.

c. Operations Followup (92901)

1) (Closed) VIO 50-348/94-07-01; Unapproved Scaffolds Near Safety-Related Equipment.

This VIO involved the erection of scaffolding near safety-related equipment that had not been approved for use by Operations. In addition, the licensee's corrective action for a similar problem, NCV 364/93-28-02, did not appear appropriate to prevent recurrence.

The licensee responded to VIO 50-348/94-07-01 by letter dated June 1, 1994. In order to avoid further violations, the licensee revised and simplified the scaffolding procedure to be more effective and usable from a human factors perspective. User groups received training on the revised procedure. TANs were issued to management and supervision describing this event and the importance of recognizing human factors problems in procedures in which multiple groups interfaced. Procedural requirements for scaffolding controls were now included in refresher training for contractors and in annual training for the plant staff. An inspector verified the accomplishment of each corrective action. Furthermore, another inspector verified during U2RF10 that Operations properly approved the installation of scaffolds as required. This VIO is closed.

2) (Closed) VIO 50-348/94-013-01; Inadequate Evaluation Prior to Removing Tags.

This VIO identified three separate examples of occasions where the SS on duty failed to adequately evaluate the impact of revised tagging orders which resulted in the adverse operation of safety-related equipment following the removal of the tags and associated repositioning actions. The licensee responded to VIO 50-348/94-013-01 by letter dated June 29, 1994.

The three examples were described in TAN 94-20 which was distributed to the plant staff. These events were also discussed during an outage meeting with plant and contractor personnel. The poor communications attributable to the events were stressed in the TAN which was sent to appropriate plant personnel and discussed at length in meetings with responsible SS, System Performance and PMD personnel. The events were also included in the 1994 Operations, Maintenance, Chemistry and Health Physics retraining cycle.

An inspector reviewed the applicable CAR #2075, TAN 94-20, and verified that the corrective actions had been completed. This VIO is closed.

3) (Closed) VIO 50-364/95-011-01; Missed Recording Lowest Tavg Temperature During Approach to Criticality.

This violation was caused when a RO failed to properly record the lowest Tavg temperature during a Unit 2 startup. The licensee responded to VIO 50-364/95-011-01 by letter dated August 15, 1995. Proposed corrective actions included coaching the responsible RO involved in this event on the importance of following procedures and ensuring that all entries are as accurate as possible. To avoid further violations, the licensee has emphasized this event with other plant personnel, issued TAN 95-0823, and used this event to reemphasize expectations with Operations shift personnel concerning accuracy and timeliness of recording data. An inspector reviewed applicable CAR #2150 and TAN 95-0823, discussed this event with Operations personnel and verified that all corrective actions had been completed. This VIO is closed.

4) (Closed) IFI 50-348, 364/95-05-01; Excessive Backlog of FNPIR's, NRC IN's, and SSSA findings

After discussions with ES personnel and review of performance indicators published by the ES department, and inspector concluded that the number of outstanding IN responses has been reduced considerably, from 145 in early 1995 to a steady sub-sixty the last half of 1995. During this dramatic decrease, the total number of IN commitments has remained at manageable levels and continued to trend down. The volume of SSSA findings also dropped considerably (from 80 to 15), until findings from the most recent SSSA on PASS/IA conducted during the Fall of 1995 were included increasing the total to 39. Outstanding FNPIRs were reduced to a total of 36 by August 1995, which encompassed U2RF10, but they increased markedly to a population of 130 in the following three months which included U1RF13. This is an area that may again need management attention. Even though FNPIR commitments were down dramatically from 461 in September 1994 to 154 in November 1995, it will be a challenge for the licensee to maintain the continuing downward trend while the large number of outstanding FNPIRs are being resolved. This IFI is closed.

4. MAINTENANCE/SURVEILLANCE

a. Maintenance Observations (62703)

Inspectors observed and reviewed portions of various licensee corrective and preventative maintenance activities, to determine conformance with procedures, work instructions and regulatory requirements. Work orders were also evaluated to determine status of outstanding jobs and to ensure that proper priority was assigned to safety-related equipment. The following maintenance activities were observed.

1) WO 57144; Sealing Electrical Conduits

The inspector's observed the inspection and sealing of conduits in rooms 179 and 404 as a consequence of the problem described in paragraph 6.a. below. Most of the conduits were two inch or less in diameter, and passed through the room fire walls. The conduits typically had one or more aluminum condulet covers or pull boxes which were removed for inspection and sealing. Only one of the conduits had a safety related train marking on its exterior (four inch diameter, room 179). The electricians performing the work indicated that these rooms were typical. This observation was supported by an inspector walkthru of the other rooms and review of work sheets generated on each room in the encompassing work package. The responsible electricians were knowledgeable of the job requirements and performed their work conscientiously per WO instructions.

2) WO 03978; 2K 4160 VAC Bus, DK-02 Lighting Arrestor

During engineering walkdowns of the plant per its commitments to GL 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue A-46," the licensee identified a number of problems that required additional modification of plant equipment. The conduct of these walkdowns using SQUG methodology were controlled via the licensee's corporate offices.

An inspector observed repairs made to improve the seismic adequacy of the 2K 4160 VAC Bus lightning arrestor. The inspector observed the repair of three out of four structural retaining fasteners IAW work procedures. The repairs were verified and documented by corporate engineering.

3) WO 61882; 1J Local Control Panel (Cabinet) Modification

As part of the same engineering walkdown effort described above, the 1J Local Control Cabinet was identified to have conduits adjacent to it that could be contacted during a seismic event. PCN S95-1-8991 was generated for the stiffening work and was implemented by approved WO. The licensee personnel were observed torquing the new angle iron bracket fasteners atop the cabinet that would prevent any relative cabinet motion. The installation was solid and installed IAW with the PCN.

4) WO 536851; Detect and Repair Underground Leak

The licensee had identified a underground leak in the area behind the Unit 1 side of the common auxiliary building. A wet spot had welled up on the clay and gravel surface. Upon excavation, the licensee found a leaking 2 inch diameter carbon steel Unit 1 non-safety SG blowdown pipe under the clay in front of and between the Unit 1 RWST and RMWST. The pipe had through-wall corrosion. The pipe was

temporarily patched until the next Unit 1 extended outage. An inspector observed the patch installation IAW work instructions.

5) WO 66475; 2B EDG Maintenance

An inspector observed the backlash measurement of the 2B EDG 105 tooth intermediate gear in the diesel engine's valve train. The back lash had been measured about nine months ago and found to be beyond the applicable TM values for a new diesel. The vendor provided guidance and a written evaluation at that time. The vendor recommended periodic re-measurement and trending.

On December 14, the inspector observed the vendor re-measure the backlash of the herring bone type gear. The vendor found that the backlash had opened up an additional 0.003 to 0.004 inch and indicated that this was acceptable for the interim. The inspector observed some wear on the gear and the vendor indicated that this had not changed appreciably since the last measurement. The vendor provided assurance that the gearing was satisfactory for the next nine month period. Corporate engineering documented the vendor's conclusions in a January 2, 1996 memorandum. The 105 tooth gear will be replaced at the next major maintenance interval in nine months.

b. Surveillance Observation (61726)

Inspectors witnessed surveillance activities performed on safety-related systems/components in order to verify that activities were performed IAW licensee procedures, FNP Technical Specifications and NRC regulatory requirements. Portions of the following surveillances were observed:

1) Unit 1 Missed TS Surveillance

On October 29, 1995, Operations discovered that they had not performed 1-STP-9.0, RCS Leakage Test, at its scheduled time. Unit 1 was in Mode 4 (347 psig, 340 degrees F) when the missed 72 hour surveillance requirement (TS 4.4.7.2.1.d) was discovered. The most limiting TS 3.4.7.2 LCO action statement required the unit to be in Hot Standby within 6 hours and in Cold Shutdown within the next 30 hours. Upon discovery, the licensee immediately entered the action statement and performed a satisfactory leak rate test IAW STP 9.0. As additional immediate actions, the licensee verified that other required STPs were current and initiated FNPIR 1-95-297.

An inspector discussed the event with the licensee (including the responsible SFO's) and, reviewed operator logs surrounding the days in question and other information available on the above occurrence.

The last successful RCS leak rate test had been accomplished on October 24 at 5:53 p.m. CST. Unit 1 entered Mode 4 (i.e., Hot Shutdown) on October 25 at 2:41 p.m.. The next RCS leak test IAW STP-9.0 was not completed until October 29 at 1:47 a.m., which was approximately 11 hours beyond the end of its allowed grace period.

However, the TS LCO action statement had not as yet expired when the missed TS surveillance requirement was discovered. Test results from the STP-9.0 performed on October 29 indicated that RCS identified leakage was .052 gpm and unidentified leakage was .065 gpm; well within TS allowed leakage limits.

Two consecutive nightly STP status reviews conducted by two different Unit 1 SFOs responsible for the Unit 1 surveillance schedule, inadvertently overlooked the STP-9.0 due date. AP-5.0, Surveillance Program Administrative Control (section 5.0) requires Operations to review the schedule each day. The review consists of going over tabular hand-written lists that are in a ledger-like binder (surveillance schedule "B"). The second SFO who had also overlooked the STP-9.0 due date during his surveillance schedule review on October 28, was the same SFO that discovered it was missed on October 29. Both SFO's indicated that their concurrent tasks and the many hectic activities of a busy office dealing with end-of-outage closeout issues contributed to their error in review.

Shortly after the occurrence, the licensee implemented other longer term actions as follows:

- Revised procedures 1-UOP-1.1 and 2-UOP-1.1, Startup of Unit from Cold Shutdown to Hot Standby to include additional guidance on pre-mode change surveillance reviews; and,

- Revised FNP 0-SOP-0, General Instructions to Operations Personnel, to included clarification on the surveillance review process.

Failure of Operations to perform the RCS leak test within 72 hours (plus the allowed grace period) constituted a violation of TS 4.4.7.2.1.d. However, this violation will not be subject to enforcement action because it was identified by the licensee, prompt corrective action was implemented, and the low safety significance, meets the criteria specified in Section VII.B of the NRC Enforcement Policy. This non-cited violation is identified as NCV 50-348/95-02-02, Failure to Perform Scheduled TS Surveillance.

2) FNP-2-STP-24.2; Service Water Pumps 2D, 2E, and 2C - Quarterly In-Service Tests

On December 6, 1995, the inspector witnessed the licensee's performance of a quarterly in-service test to demonstrate the operability of Service Water Pumps 2D, 2E, and 2C. The test was performed by Operations with assistance from an I&C technician. Plant personnel were knowledgeable and familiar with the service water system and the requirements of the test procedure. The inspector noted that all test equipment was in calibration, and procedure steps and data sheets were performed in sequence and signed off appropriately.

The test was satisfactory except the vibration reading for the 2E pump motor was found to be in the "Alert" range. A subsequent evaluation by Maintenance Engineering determined that the pump was operable and recommended that the test schedule for these pumps be revised to require tests of the "B" Train pumps be performed within each 45 days in lieu of each 90 days until the cause of the vibration problem is identified and corrected. This revised test schedule meets the in-service test program and should verify that these pumps remain operable until the cause of the problem is identified and corrected.

3) FNP-2-IMP-228.4; Nuclear Instrumentation System Intermediate Range Channel N-36 Detector Replacement

On November 29, while attempting to restart Unit 2 after the reactor trip of November 28, operators noticed that NIS intermediate range channel NI-36 was not responding to increasing neutron flux during the approach to criticality. During the rod pull from control bank D at 66 steps to 77 steps, operators had observed that NI-35 was onscale and indicated a positive startup rate, while NI-36 continued to remain at the bottom scale with no apparent startup rate response. The SS contacted an I&C foreman, who reported that the NI-36 detector cables were not connected. Whereupon, the SS promptly directed the OATC to manually insert all control rods. An incident report was initiated (FNPIR #2-95-335) and a formal root cause investigation was begun. The root cause team was led by the Technical Manager. An inspector reviewed the preliminary root cause report, associated operator logs, the FNPIR, and LER. The inspector also discussed the event with Operations management and the root cause team leader.

Several days before the Unit 2 reactor trip of November 28, operators had declared NI-36 inoperable because it was indicating noticeably less than NI-35. Immediately following the reactor trip, while Unit 2 was in Mode 3, I&C technicians on evening shift replaced the NI-36 detector per WO #533769 and FNP-2-IMP-228.4. The detector replacement in containment was completed by 11:30 p.m. on November 28. When the evening shift technicians turned over to night shift, the drawer cables for both the NIS source range (NI-32) and intermediate range (NI-36) detectors were still disconnected. Steps 7.5.1.4 and 7.5.2.4 of IMP-228.4, for reconnecting NI-32 and NI-36, respectively, were not signed. The night shift I&C technicians focused on returning NI-32 to service. They reconnected the NI-32 drawer cables and began to recalibrate the system. At sometime during this shift, an I&C technician also, inadvertently, initialed step 7.5.2.4 as complete, even though NI-36 was still disconnected. During the turnover to day shift, night shift technicians failed to mention that the NI-36 drawer cables were not connected. Day shift I&C technicians then proceeded to recalibrate and functionally test both NI-32 and 36 drawers.

The recalibration of NI-36 was performed IAW FNP-2-STP-228.4, which does not require disconnecting and reconnecting detector input cables when reactor power is below 1E-11 amps. Consequently, NI-36 was recalibrated and functionally tested on day shift of November 29 with its cables still disconnected. Concurrent with NI-36 recalibration efforts, operators closed reactor trip breakers at about 10:00 a.m. to support SSPS testing (both CRDM MG sets were running at the time). NI-36 was functionally accepted at 8:35 p.m. per FNP-2-STP-41.2, IR Range Functional Check Channel NI-36, and declared operable. At 8:37 p.m., operators began to withdraw Unit 2 control rod shutdown banks. At 9:12 p.m., operators commenced reactor startup by withdrawing the control banks. At 9:54 p.m., the SS concluded that NI-36 was inoperable, and all rods were fully inserted by 10:03 p.m. The NI-36 drawer cables were reconnected and the channel declared operable at 11:57 p.m. on November 29. Unit 2 achieved criticality at 1:09 a.m. the next day. The subsequent startup continued uneventfully, with NI-36 performing as expected.

During the reactor startup (i.e. rod withdrawal), while NI-36 was incapacitated, both NIS SR channels, NIS IR channel NI-35, and all four NIS PR channels with associated low power reactor trip capabilities were fully operable. Intermediate range high neutron flux reactor trip and rod stop are designed to automatically actuate by either NI-35 or 36. Furthermore, FSAR Chapter 15 (Table 15.1-3 and Section 15.2) accident analyses assumes that only the power range low neutron flux reactor trip setpoint actuates. FSAR chapter 15 mentions NIS IR high flux reactor trip actuation, but doesn't take credit for it in the accident analyses.

After the event, the licensee conducted a reactivity assessment and confirmed that the reactor had entered into Mode 2 but was still subcritical. The effective neutron multiplication factor was calculated to be 0.996. TS Table 3.3.1. requires both NIS IR channels to be operable during Mode 2 operation. TS 3.0.4 further requires that the provisions of TS Table 3.3.1 must be met without reliance on the applicable LCO action statement prior to entering Modes 1, 2, or closing reactor trip breakers with fuel in the vessel and control rods capable of withdrawal. Due to personnel errors by the I&C department, Unit 2 operators closed the reactor trip breakers with fuel in the vessel and the control rods capable of withdrawal, and also entered Mode 2, with only one operable NIS IR channel. This violation of TS requirements is identified as VIO 50-364/95-20-03, Reactor Startup With Disconnected NIS IR Detector (NI-36).

During review of the event, the inspector discovered that NIS SR channel NI-32 was not functionally accepted and declared operable until just before Unit 2 operators began to withdraw rods. This was approximately ten hours after operators had closed the reactor trip breakers with fuel in the vessel and CRDM MG sets running. TS Table 3.3-1 prohibits this condition unless both NIS SR channels are operable. Until such time as the licensee can complete a detailed

sequence of events to confirm exactly when Unit 2 NIS SR channels were declared operable and a subsequent review by the inspectors, this issue will be identified as URI 50-364/95-20-04, Mode Change With Inoperable Source Range Detector (NI-32)

4) FNP-1-STP-228.09; Nuclear Instrumentation System Power Range Channel N41 Functional Test

An inspector observed the conduct of STP-228.09 on Unit 1 NIS PR channel NI-41 by qualified I&C technicians. This activity was authorized by WA #446580. The NI-41 overpower trip setpoint and reset were verified to be within tolerance and no adjustment was necessary. Even though this was the first time either technician had performed this particular STP, their familiarity with the NIS equipment and administrative requirements for procedural compliance were obvious. The technicians were conservative and careful in their approach, and followed the STP in a strict step-by-step manner.

c. Followup Maintenance/Surveillance (92902)

1) (Closed) VIO 50-348, 364/91-010-01; Failure to Follow Procedures

The violation involved four examples of failure to follow procedures. Details of each example are discussed in the subject NOV and NRC inspection report. The licensee responded to VIO 50-348, 364/91-010-01 by letter dated June 26, 1991. In this response, the licensee classified all examples as personnel errors which necessitated discipline, with only one instance of corrective action requiring a procedure change. The licensee also informed the plant staff of these examples of personnel errors during various group meetings, safety meetings, memos to plant personnel and in the plant newsletter. Employees were challenged to perform their daily jobs in such a manner to prevent these types of errors. Plant management was directed to increase the amount of time spent in monitoring and directing plant activities.

An inspector reviewed applicable CAR #1847 and procedures FNP-1/2-RCP-12, Revision 2, and verified that the above corrective actions had been completed. This violation is closed.

5. ENGINEERING AND TECHNICAL SUPPORT

Onsite Engineering (37551)

Inspectors periodically inspected onsite engineering/technical support activities (e.g., design control, configuration management, system performance monitoring, plant modification, etc.). Effectiveness of on-site engineering and technical group support of licensee efforts to identify, resolve and prevent incidents or problems were also inspected.

a. Engineering Followup (92903)

1) (Closed) IFI 50-348, 364/89-024-01 and IFI 50-348/94-022-01; Service Water Pump Flow Anomaly

These IFI's identified differences between the results from the in-service testing of the SW pumps and the anticipated results based on the pump vendors' test curves. The results of the Unit 1 and Unit 2 pump tests are also different. In addition, these reports and the NRC SWOPI report 50-348, 364/93-13, identified a concern associated with the highly fluctuating annubar instrumentation readings taken during the surveillance tests which were difficult to interpret and did not produce repeatable test results. To resolve these concerns, the licensee issued REA 93-058, Service Water Pump Flow Measurement.

As a result of the testing and engineering involvement in the test process, standardized procedure and instrumentation have resulted. The testing arrangement to provide good test data and pump trending information was worked out via the application of many hours of test and re-testing that have been observed by the residents. The final engineering test procedure has been converted into operational procedures and an I&C test hookup and monitoring procedure. Procedures 1-STP-24.1 and 1-STP-24.2 for the Unit 1 SW pumps, quarterly IST (A and B trains), have been revised to reflect the approved testing. The Unit 2 equivalent procedures are expected to be revised in the near future. I&C procedure 0-IMP-212.1, Service Water Test Transmitter, has been revised for use on both units.

The inspector reviewed the evaluation data for REA 93-0358, reviewed the revised procedures, and concluded that the NRC concerns had been adequately addressed. These IFIs are closed.

2) (Closed) IFI 50-348, 364/93-013-01; Further Heat Exchanger Performance Testing Improvements

This item identified several weaknesses in the licensee's heat exchanger performance testing program. NRC inspection report 50-348, 364/94-22 documented the licensee's progress made to resolve the NRC's concerns. This included developing a program for trending the flow resistance of the safety related room coolers.

To resolve this concern, the licensee initiated REA 94-0477, Alternate Testing for Room Coolers. This REA identified the required design flow rates through each or the 37 safety related room coolers. A test program, ETP-4402, Service Water Differential Pressure and Flow Data for Safety Related Coolers, was initiated to determine if the actual flow through each room cooler met the design basis. The test data obtained from three test cycles will be used to determine actual flow performance data and will be used to develop surveillance test procedures. These test procedures will be performed each 18 months to verify that the room coolers are operable.

The first test cycle has been completed. The inspectors previously reviewed some of the completed test packages and observed testing of the room coolers. Testing for the second cycle was completed for seven of the 37 room coolers. Completion of the second cycle is scheduled for the Spring of 1996. The third test cycle is scheduled to be completed in early 1998.

Maintenance on the original installed room cooler heat exchangers was difficult due to the design of the heat exchangers. Additionally, several of the exchangers, having nearly 20 years of use, were showing signs of deterioration. Therefore, a program was implemented to replace the existing heat exchangers with exchangers of a design which facilitates maintenance activities. A total of 19 room cooler heat exchangers have been replaced and the remaining 18 are to be replaced during future refueling outages. The inspector reviewed PCNs 90-6986-M002 and 90-6987-M002 (Units 1 and 2, respectively) that will perform the remaining cooler replacements. The residents have observed many of the replacements over the past three outages. Approximately three heat exchangers are scheduled to be replaced per refueling outage. This replacement program is scheduled to be completed by the year 2000.

The licensee's actions and scheduled programs address the NRC concerns; therefore, this item is closed.

3) (Closed) IFI 50-348, 364/93-013-03; Silt Reduction Efforts

This item identified a number of SWS valves, pumps and small bore piping which had a history of being clogged with silt and rust. The licensee addressed the concern associated with the SW pumps by including small bore piping lines in the routine periodic pipe flushing program. The periodic flushing of this piping resulted in a reduced incidence of line clogging due to silt accumulation. The inspector reviewed procedures FNP-1/2-STP-24.11, Service Water Cyclone Separator Valves Inservice Test (Unit 1 Revision 7 and Unit 2 Revision 2), and verified that the flushing of the small bore piping was being performed.

To resolve the concern associated with clogging of the containment isolation valves for the reactor coolant pump motor coolers, the small bore piping to these valves was replaced with stainless steel piping and the containment isolation valves in this piping are scheduled to be replaced. There are three of these valves per unit. The residents had observed the replacement of this piping and were familiar with the PCN packages. The existing valves are William Powell gate type valves and are to be replaced with new stainless steel valves designed to be less susceptible to failure due to silt accumulation. These valves are scheduled for replacement in Unit 1 during the Spring 1997 refueling outage by DCP 8751 and in Unit 2 during the Fall 1996 refueling outage by DCP 8752.

There are an additional 16 William Powell valves per unit on various systems which will be replaced with stainless steel butterfly valves by DCPs 8751 and 8752. Attempts will be made to replace these valves during the Fall 1996 and Spring 1997 refueling outages. However, first priority will be given to replacement of the three containment isolation valves for the RCS room coolers.

The licensee has taken many positive steps to resolve clogging problems. Although several items are pending, the licensee has generated PCNs and scheduled the remainder of the proposed improvements. This item is closed.

4) (Closed) LER 50-348/94-005; Missile Protection for Condensate Storage Tanks

On October 21, 1994, the licensee conducted an SSSA of the AFW system and identified that a number of piping and transmitter tubing connections to the Unit 1 and Unit 2 CSTs were not provided with rupture protection from missiles. FSAR Section 9.2.6.6 stated that the lower 12 feet of the CST is designed to withstand any rupture caused by missiles. At the time of discovery, until a 10 CFR 50.59 evaluation could be completed the licensee implemented interim corrective action measures to: (1) close and tag the vacuum degasification isolation valve; and (2) station plugging apparatus at each CST for the applicable unprotected connections.

The licensee concluded that this situation was a design oversight. A 10 CFR 50.59 evaluation of the design discrepancy was completed on November 17, 1994. A probabilistic risk analysis was prepared which indicated that the probability of an accident due to the lack of missile protection on these connections was negligible, 1.0E-08 per year. Furthermore, loss of inventory in the CSTs would be detected by a CST level indicator and alarms in the main control room or by operators performing routine periodic walkdown inspections in the vicinity of the CSTs. Appropriate corrective action to control the leakage could be promptly initiated. In addition, an AFW backup supply is available from the SWS.

Based on the negligible increase in the probability of an accident due to the lack of missile protection for the CST connections, the licensee elected to revise the FSAR. This revision included the missile protection analysis and deleted the requirement for protecting CST connections from missiles. This revision was submitted too late to be included in the 1995 FSAR update, but is planned for the 1996 FSAR update.

The inspector reviewed the 10 CFR 50.59 evaluation and calculation REES-F-94-014, and verified that the probabilistic risk analysis data had been addressed by the proposed FSAR update. This item is closed.

6. PLANT SUPPORT (71750)

a. Routine Inspection of Fire Protection Activities

During normal tours, inspectors routinely examined aspects of the plant FP Program (e.g., transient fire loads, flammable materials storage, fire brigade readiness, ignition source/risk reduction efforts & FP features). In general, plant personnel and equipment conformed with the established FP Program. Several minor problems were discussed and resolved with the onsite Fire Marshall. One of these problems involved the large number of combustible material storage cabinets stationed on various levels of the RCA. Even though there did not appear to be an immediate issue with excess fire loading, the inspectors questioned the Fire Marshall and plant management why such cabinets were not stationed in the designated Combustible Storage Rooms. The inspectors will follow this up during the course of routine inspections.

Unsealed Electrical Conduits That Penetrate Through Fire Barriers

On August 11, 1995, during the performance of a plant modification, an electrician discovered a conduit which penetrated the fire barrier walls of Room 167 of Unit 1 that was not sealed internally. FNPIR 1-95-201 was initiated and an hourly fire watch was established for areas in the vicinity of the unsealed conduits.

On August 22, 1995, during the performance of this same plant modification, an electrician found another conduit not sealed that penetrated the fire barrier walls of Room 167. FNPIR 1-95-215 was initiated for this problem and an hourly fire watch was also established. The licensee began an investigation to determine if any additional conduit penetrations were not properly sealed. This investigation identified approximately 125 penetrations with conduits of 3/4 to 4-inches in diameter that penetrated fire barrier walls and did not appear to be properly sealed. The areas adjacent to these unsealed conduits were promptly included in hourly fire watch patrols. The affected fire wall penetrations were located in twelve rooms designated as combustible storage areas in Unit 1. Construction Drawing A-177541, Tray & Conduit Details & Notes, requires the interior of all aluminum and rigid steel conduits that penetrate fire walls or pressure tight boundaries to be sealed with a silicone foam at the penetration or at the conduit termination.

Licensee conduit inspections and sealing activities began in December 1995. An inspection of each conduit that passed through the affected fire wall penetrations was performed to determine the corrective action required to meet design drawing requirements. All inspection results and repair actions were performed and documented (see paragraph 4.a above). The documented packages were being routed to engineering for evaluation. The licensee's evaluation will address the magnitude of the problem and will include an analysis of the possible effect that these unsealed conduits may have had on the safe shutdown capability in the

event of a fire pursuant to 10 CFR 50, Appendix R. During tours through the plant, the inspectors observed the hourly fire watches for the affected penetrations which are to remain in effect until all conduits are properly sealed. By NEL letter 95-0322, dated December 15, 1995 four of the rooms/spaces had been evaluated and the safety impact of the "as-found" conditions were deemed minimal by the licensee.

Until the inspectors review the licensee's final safety evaluation of the unsealed conduits, this item will be identified as URI 50-348/95-20-05, Unsealed Conduits Penetrating Fire Walls Of Combustible Storage Areas.

Unit 1 Containment Smoke Detection

Very early into Unit 1 cycle 14 operation, a smoke detector in containment alarmed and would not clear. Operations confirmed there was no fire in containment and promptly implemented compensatory measures to monitor containment temperatures on a routine basis. In order to restore pyro-panel alarm capability, the licensee proposed and implemented a minor design departure that disconnected the 1A-22 containment fire detection system. This eliminated 1A-22 as a nuisance alarm and now allows the pyro-panel to reflash. However, an inspector expressed concern that 1A-22 would be disabled for almost the entire Unit 1 fuel cycle and the operator's compensatory measures represented a considerable diminishment in containment smoke detection capability. To address this concern for the short-term, an Operations Superintendent distributed an expanded list of control room indications for shift operators that could be used to monitor for a containment fire. For the longterm, the licensee is pursuing possible alternatives for restoring or improving containment fire detection capability. The inspectors will follow this up during the course of routine inspections.

b. Routine Security Inspection Activities

During routine inspection activities, inspectors verified that security program plans were being properly implemented. This was evidenced by: proper display of picture badges; appropriate key carding of vital area doors (except as noted below); adequate stationing/tours of security personnel; proper searching of packages/personnel at the Primary Access Point; and adequacy of compensatory measures during disablement of vital area barriers. Licensee activities observed during the inspection period appeared to be adequate to ensure proper plant physical protection. Guards were observed to be alert and attentive while stationed at disabled doors, and responded promptly to open door alarms. Posted positions were manned with frequent relief.

c. Routine Health Physics Inspection Activities

Inspectors routinely examined postings and surveys of radiological areas and labelling of radioactive materials in the RCA. Work activities of plant personnel in the RCA were observed to adhere to established administrative guidelines for radiation protection and ALARA work

practices. Effluent and environmental radiation monitors were monitored on a routine basis for any significant changes in radiological conditions or indications of uncontrolled releases. No significant findings were identified. HP technicians maintained positive control over the RCA and provided good support of Unit 1 and 2 steady-state operations. HPS efforts to cleanup the Unit 1 and 2 RCA continued at a slow but consistent and methodical rate.

d. Emergency Preparedness

1) Emergency Plan Dress Rehearsal

The inspector audited an Emergency Drill which was conducted on December 7, 1995, and involved a simulated fuel failure and subsequent large break LOCA in Loop B of the Unit 1 RCS. A site Alert was declared at 8:11 a.m. due to an increased level of radiation in the Unit 1 RCS. A Site Area Emergency was declared at 9:43 a.m. and a General Emergency was declared at 11:21 a.m. due to increased RCS radiation activity and decreasing inventory in the RCS. Following the drill, the drill participants and drill monitors met to critique the drill activities. The results of the drill were discussed and identified strengths and areas in need of improvement were identified.

The inspector noted that all of the drill objectives were met and performance of the licensee's staff was satisfactory. Accountability of all site personnel was accomplished within 30 minutes after declaring the site emergency.

2) Emergency Plan Annual Exercise

The resident inspectors observed and participated in the December 13 annual Emergency Exercise which was conducted from 7:00 a.m. to 12:20 p.m. A regional inspector was also onsite to evaluate licensee performance. One resident inspector observed simulator control room performance and chemistry sampling activity. Another resident inspector participated in the TSC as an exercise player. Although this exercise was not scrutinized by the FEMA, there was full offsite participation by the States of Alabama and Georgia as well as Houston and Early Counties, and partial participation by the State of Florida. The licensee's onsite TSC, OSC, and EOF, and offsite EOC were fully manned during the exercise. The NRC's evaluation focused on the overall adequacy of the licensee's emergency response program, the implementation of the Emergency Plan and associated procedures in response to the simulated emergency conditions, and the effectiveness of the emergency response training program as reflected by the players' performance during the exercise.

The scenario was judged by the inspector to be challenging, and was satisfactory for exercising the onsite and offsite emergency response organizations of the licensee. The inspector observed that the exercise controllers were knowledgeable, and managed with minor

exceptions, to maintain the established timeline of scenario events. The Attachment to this report exhibits the licensee's objectives for the exercise and a narrative summary of the scenario.

The inspector determined that the licensee's onsite emergency organization was well defined and was generally effective in managing the simulated emergency. The licensee was using the "team" concept in which on-call status for ERO duty was rotated among several teams on a weekly basis. Adequate staffing of the ERFs was provided for the initial accident response, and the interfaces between the onsite organization and offsite support agencies were adequate to ensure prompt notification and support from offsite agencies as required.

Emergency Implementing Procedure FNP-0-EIP-9.0, "Emergency Classifications and Actions", provided an EAL scheme for the categorization of an off-normal event as one of the four standard emergency classifications (if the applicable criteria were met). The licensee's staff made emergency classifications during the exercise as follows:

- At 7:19 a.m., an Alert was declared based on a faulted steam generator inside containment.

- At 8:44 a.m., a Site Area Emergency was declared based on the rupture of a steam generator tube.

- At 10:12 a.m., a General Emergency was declared based on the loss of the last of the three fission-product barriers, reactor coolant activity exceeding 300 Ci/g, and a step increase in a key radiation effluent monitor reading (R-14).

The above conditions were all evaluated and correctly classified in accordance with EIP-9.

The inspector observed the activation and staffing process for the TSC following the Alert declaration. Although the TSC relieved the control room simulator of EP responsibilities in a timely manner, the Emergency Director did not explicitly announce to personnel that the TSC facility was fully staffed and operational. Aside from this, TSC operations were generally performed in a manner that was both efficient and effective. The OSC functioned well. The inspector observed EOF activities and found that personnel in that facility were also performing their duties effectively.

One apparent anomaly noted by the inspector was in the area of dose assessment. By 9:20 a.m., the licensee had estimated fuel-clad damage at 50%, with plant conditions continuing to degrade. Nevertheless, no dose projections using a default release rate were performed in response to those circumstances. The next two offsite emergency notification messages (numbers 5 and 6) indicated "None" under Item 10, "Emergency Release(s)", whereas it appeared to the inspector that "Potential" should have been indicated, with an

associated requirement for including data on offsite dose projections in Items 12 and 13. Not until the first follow-up message after the General Emergency declaration (notification message number 8, transmitted at 10:57 a.m.) did the licensee provide estimates of projected offsite doses to governmental authorities. The inspector informed licensee management that this approach was not prudent and was not consistent with typical industry practice for performing dose assessments. Licensee management stated that this matter would be reviewed and considered as a possible area for program improvement.

The licensee conducted player critiques immediately after the exercise, followed by a detailed controller/monitor critique. The critique determined that all exercise objectives were satisfactorily met and did not identify major findings, but did disclose several minor issues and areas for improvement. This initial postexercise critique was judged by the inspector to be thorough and productive.

Resident inspector observations in the control room simulator revealed a well functioning operations crew in a new situation. This was the first time the simulator was used for EP exercise purposes. Due to on-going simulator modifications and present incompatibility of the simulator's radiation monitors' for simulating an emergency, the simulator was shutdown during the exercise. However, licensee plans are to make the simulator functional for the 1996 drills and exercise. Even with the simulator off, the enactment was much improved over previous annual exercises that were held in the actual at-power control room. Operator accessibility to the MCBs and the freedom to carry out the scenarios in a unfettered manner were greatly enhanced.

The operations staff responded well to the scripted scenario using updated control room instrumentation data provided at intervals by the monitors. Operators used appropriate procedures for the various stages of the event(s) and exited procedures as required for each phase of the scenario. They continuously informed appropriate personnel as the event progressed and made required notifications.

An inspector observed chemistry and HP personnel conduct equipment setup preparations/calibrations, collect an actual PASS sample, and analyze the sample. In the Unit 2 chemistry lab, a HP technician was present to provide simulated radiological oversight of the chemist, attend to the potentially changing radiological condition of the lab areas, and to control the PASS sample as it was received from the returning PASS team. Overall, the licensee performed well in the Unit 2 chemistry lab, the chemist had some difficulty setting up and calibrating the test equipment for use on the PASS sample. The sampling of the RCS using the PASS was rapid, controlled, and ALARA conscious. The three person team (one HP technician and two chemists) were dispatched from and appropriately controlled by the TSC/OSC. The team carefully transported the sample to the Unit 2 lab for analysis. The turnover of the sample (pig) to the lab chemist was fairly well controlled, although there was some slight confusion

as to the actual radiological levels of the sample pig. The HP technicians halted the process until actual status was determined. The chemist completed the sample analysis in slightly over two hours, well within the allowed three hours acceptance criteria.

e. Plant Support Followup (92904)

1) (Closed) VIO 50-348, 364/95-011-04; Failure to Search Hand Carried Packages Carried into Protected Plant Area

This violation occurred on May 22, 1995, and involved the failure of security force members to search several hand carried packages (lunch cartons) brought into the protected area by plant employees. Hand carried packages are required to be searched by the site security plan.

The licensee responded to VIO 50-348, 364/95-011-04 by letter dated August 15, 1995, and determined that the violation was caused by personnel error when security officers failed to follow procedures and search all hand carried items being brought into the plant's protected area. To avoid further violations, the licensee retrained all security officers on the requirement to search all hand carried items brought into the protected area.

The inspector reviewed applicable CAR #2151, training records of security personnel, discussed this event with Security personnel, and verified that the above corrective actions had been completed. This VIO is closed.

2) (Closed) IFI 50-348, 364/94-25-01; Exercise Weakness Failed To Recognize Emergency Action Level

Control Room supervisors failed to recognize the high dose equivalent iodine activity of the RCS sample as exceeding an EAL for an Alert classification until prompted by the on-call Emergency Director.

The licensee responded to the subject exercise weakness by letter dated March 9, 1995. The inspector's review of this response, together with observations of control room simulator personnel performance during the exercise, concluded that the licensee had appropriately addressed the concern identified by the subject finding. This IFI is closed.

3) (Open) URI 50-348, 364/95-19-01, Vital Area Access and Physical Checks

After reviewing the FNP Security Plan, the inspector questioned security management regarding the implementation of audits and physical checks of designated vital areas. Subsequent response by security management confirmed that physical checks were not being performed of all vital areas as required by the security plan. The licensee has since implemented corrective actions to address this

deficiency. A Region II security inspector is planning to follow up this issue and examine licensee corrective actions in January 1996.

7. EXIT INTERVIEW

On January 3, 1996, the inspectors met with the licensee representatives identified in paragraph 1. During this meeting the inspectors summarized the scope and findings of the inspection as detailed in this report. SNC management at FNP acknowledged these findings and did not identify as proprietary any material provided to or reviewed by the inspectors nor did they express any dissenting comments.

ITEM NUMBER		DESCRIPTION AND REFERENCE
IFI 50-348, 364/89-024-01	(Closed)	Service Water Pump Flow Anomaly (paragraph 5.a.1)
VIO 50-348, 364/91-010-01	(Closed)	Failure to Follow Procedures (paragraph 4.c.1)
IFI 50-348, 364/93-013-01	(Closed)	Further Heat Exchanger Performance Testing Improvements (paragraph 5.a.2)
IFI 50-348, 364/93-013-03	(Closed)	Silt Reduction Efforts (paragraph 5.a.3)
VIO 50-348/94-07-01	(Closed)	Unapproved Scaffolds Near Safety-Related Equipment. (paragraph 3.c.1)
LER 50-348/94-005	(Closed)	Missile Protection for Condensate Storage Tanks (paragraph 5.a.4)
VIO 50-348/94-013-01	(Closed)	Inadequate Evaluation Prior to Removing Tags (paragraph 3.c.2)
IFI 50-348/94-022-01	(Closed)	Service Water Pump Flow Anomaly (paragraph 5.a.1)
IFI 50-348, 364/94-25-01	(Closed)	Exercise Weakness - Failed To Recognize Emergency Action Level (paragraph 6.e.2)
IFI 50-348, 364/95-05-01	(Closed)	Excessive Backlog of FNPIR's, NRC IN's, and SSSA findings (paragraph 3.c.4)
VIO 50-364/95-011-01	(Closed)	Missed Recording Lowest Tavg Temperature During Approach to Criticality (paragraph 3.c.3)
VIO 50-348, 364/95-011-04	(Closed)	Failure to Search Hand Carried Packages Carried into Protected Plant Area (paragraph 6.e.1)

URI 50-348, 364/95-19-01	(Open)	Vital Area Access and Physical Checks (paragraph 6.e.3)
IFI 50-348, 364/95-20-01	(Open)	Root Cause Program Effectiveness (paragraph 3.b.)
NCV 50-348/95-20-02	(Closed)	Failure to Complete Scheduled TS Surveillance (paragraph 4.b.1)
VIO 50-364/95-20-03	(Open)	Reactor Startup With Disconnected NIS IR Detector (NI-36) (paragraph 4.b.3)
URI 50-364/95-20-04	(Open)	Mode Change With Inoperable Source Range Detector (NI-32) (paragraph 4.b.3)
URI 50-348/95-20-05	(Open)	Unsealed Conduits Penetrating Fire Walls Of Combustible Storage Areas (paragraph 6.a.)

8. ACRONYMS AND ABBREVIATIONS

ACP - Administrative Control Procedure
AFW - Auxiliary Feedwater
ALARA - As Low As Reasonably Achievable
AOP - Abnormal Operating Procedure
AP - Administrative Procedure
CAR - Corrective Action Report
CCW - Component Cooling Water
CFR - Code of Federal Regulations
CR - Control Room
CRDM - Control Rod Drive Mechanism
CST - Central Standard Time
DCP - Design Change Package
DEHC - Digital Electrohydraulic Control
DPU - Digital Processing Unit
EAL - Emergency Action Level
EDG - Emergency Diesel Generator
EIP - Emergency Implementing Procedure
elev. - Elevation
EM - Electrical Maintenance [Department]
EOC - Emergency Operations Center
EOF - Emergency Operations Facility
ERF - Emergency Response Facility
ERO - Emergency Response Organization
EP - Emergency Planning
EPB - Emergency Power Board
ES - Engineering Support [Department]
ETP - Engineering Test Procedure
F - Farenheit
FEMA - Federal Emergency Management Agency
FNP - Farley Nuclear Plant

FNPIR - Farley Nuclear Plant Incident Report
FP - Fire Protection
FSAR - Final Safety Analysis Report
GL - Generic Letter
HHSI - High-Head Safety Injection
HP - Health Physics
HPS - Health Physics Support
HVAC - Heating, Ventilation, and Air Conditioning
IA - Instrument Air
I&C - Instrumentation and Control [Department]
I/O - Input/Ouput
IAW - In Accordance With
IFI - Inspector Followup Item
IMP - Instrumentation Maintenance Procedure
IN - Information Notice
IR - Intermediate Range
IST - Inservice Test
LCO - Limiting Condition for Operation
LER - Licensee Evaluation Report
LOCA - Loss Of Coolant Accident
MCB - Main Control Board
MFW - Main Feedwater
MG - Motor-Generator
MOV - Motor-Operated Valve
MSVR - Main Steam Valve Room
MTG - Main Turbine Generator
NCV - Noncited Violation
NEL - [SNC Corporate] Nuclear Engineering and Licensing
NI - Nuclear Instrumentation
NIS - Nuclear Instrumentation System
NRC - U.S. Nuclear Regulatory Commission
OSC - Operational Support Center
OPC - Overspeed Protection Circuitry
PASS - Post Accident Sampling System
PCN - Plant Change Notice
PMD - Plant Modification and Design [Department]
PORC - PLant Onsite Review Committee
PPR - Piping Penetration Room
PR - Power Range
PRF - Penetration Room Filtration
RCA - Radiological Control Area
RCP - Radiological Control Procedure
RCS - Reactor Coolant System
REA - Request For Engineering Assistance
RMWST - Reactor Makeup Water Storage Tank
RO - Reactor Operator
RTD - Resistance Temperature Detector
SAER - Safety Audit and Engineering Review
SFO - Shift Foreman - Operating
SFP - Spent Fuel Pool
SGBD - Steam Generator Blowdown
SGFP - Steam Generator Feed Pump

SNC - Southern Nuclear Operating Company
SOP - Site Operating Procedure
SQUG - Seismic Qualification Utility Group
SR - Source Range
SS - Shift Supervisor
SSPS - Solid State Protection System
SSSA - Safety System Self-Assessment
STP - Surveillance Test Procedure
SW - Service Water
SWS - Service Water System
SWIS - Service Water Intake Structure
SWOPI - Service Water Operational Performance Inspection
TAN - Training Advisory Notice
TM - Technical Manual
TO - Tag Order
TS - Technical Specification
TSC - Technical Support Center
U2RF10 - Unit 2 Tenth Refueling Outage
URI - Unresolved Item
UOP - Unit Operating Procedure
VAC - Volts - Alternating Current
VDC - Volts - Direct Current
VIO - Notice of Violation
WO - Work Order

Attachment (4 pages):
Objectives and Scenario Precis for 1995 Farley Exercise

ATTACHMENT

1995 FARLEY NUCLEAR PLANT
ANNUAL EXERCISE OBJECTIVES
December 13, 1995

I. Participating Organizations

Full Participation: Southern Nuclear Operating Company (SNC), Alabama Power Company, State of Alabama, State of Georgia, Houston County, and Early County.

Partial Participation: State of Florida

II. Purpose

A. To meet the requirements of 10CFR50, Appendix E, 44CFR350.0 and NUREG-0654/FEMA-REP-1, Rev. 1.

B. To conduct a full scale plume exposure which will include the mobilization of SNC, Alabama Power Company, state and local personnel and resources adequate to verify the capability of participating organizations to respond to an accident scenario requiring response.

III. Southern Nuclear Operating Company and Alabama Power Company Objectives

A. On-site

1. Demonstrate that control room staff can assess the event, classify the event, take corrective measures to control the event and activate emergency response procedures.

2. Demonstrate that plant staff can activate and staff the Technical Support Center (TSC) and perform accident response activities including:

   a. Dose Assessment
   b. Off-site notification and protective action recommendations
   c. Reclassification of emergency status
   d. Personnel Accountability for all personnel on-site
   e. Radiation Monitoring Team (RMT) Dispatch and Control (if required)
   f. Site access control and admittance of essential personnel
   g. Dispatch and control of re-entry teams

3. Demonstrate the capability to turn over EOF functions to the EOF staff when the EOF is activated and staffed.

4. Demonstrate that plant staff can activate and staff the Emergency Operations Facility (EOF) and perform accident response activities including:

   a. Assuming the dose assessment function and the RMT direction and control function from the TSC staff.
   b. Coordinating logistics, engineering functions, licensing functions and manpower with the TSC and EOC.
   c. Preparing and coordinating news releases and activating the NMC.

5. Demonstrate the capability to augment EOF staff with non-essential plant personnel.

6. Demonstrate the adequacy of the plant's communication system including:
   a. Communication links to Corporate Emergency Operations Center (EOC)
   b. News Media Center (NMC)
   c. Interplant communications
   d. Communication links to state and local authorities

7. Demonstrate the capability to perform radiological monitoring.

B. Off-Site

1. Demonstrate that the corporate staff can be activated and staff the EOC in a timely fashion.

2. Demonstrate that Corporate Headquarters Emergency Operations Center (EOC) staff can provide support for:
   a. Activation of facilities
   b. Logistics (as required)
   c. Engineering and Licensing (as required)
   d. Support organization notification
   e. Briefing of company management
   f. News release preparation

3. Demonstrate that the Public Information Organization can respond to media and public inquiries, establish a rumor control center, and issue and coordinate news releases.

IV. State and Local Objectives

See Attachment 1 (Any state or local objective that cannot be demonstrated due to conditions inconsistent with the scenario will be demonstrated in a separate drill.) (Reference Extent of Play Agreements between the States and FEMA.)

V. Joint Objectives (SNC, Alabama Power Company, State of Alabama, State of Georgia, Houston County and Early County)

A. Demonstrate that all parties can coordinate news releases and conduct a joint news conference.

B. Demonstrate that adequate technical information can be exchanged among involved agencies.

VI. Exercise Limits

The plume exposure exercise will be conducted on December 13 and will begin prior to 8 A.M Central and conclude by 2:30 P.M. Central.

1995 ANNUAL EMERGENCY EXERCISE
NARRATIVE SUMMARY
December 13, 1995

The drill starts at 0700 with the Control Room staff continuing to decrease Reactor power at 2 MW/min from the current power level of 52%. The decision to ramp down in power was made to allow containment entry to search for and repair an instrument air line leak.

At 0705 the 1B SGFP trips and the crew enters AOP-13 to stabilize the plant. At 0706 a large feedline break on the 1A SG results in rapidly increasing containment pressure and decreasing presurizer level and RCS pressure. The transient results in an automatic reactor trip and safety injection and the crew enters EEP-0. Containment pressure peaks at 47 psig and all containment pressure control equipment functions with the exception of 1B and 1C Containment Coolers which fail to automatically start in slow speed and can not be started manually by the crew. The Control Room staff should declare an **ALERT** emergency based on EIP-9.0. Plant staff will start taking actions for an Alert emergency and the TSC and EOF staffs will be called in to the plant.

Within 75 minutes of the Alert declaration, the TSC and EOF should have minimum staff in place and start turning over to perform designated functions. The EOC in Birmingham will also have staff available to support plant operations.

At 0749 the 1B RCP is restarted per ESP-1.1. The thermal/pressure transient of the safety injection coupled with the flow transient of restarting the RCP results in approximately 5% of the fuel experiencing clad damage. At 0835 while operating within UOP-2.1 the crew observes a rapid decrease in pressurizer level and a corresponding increase in containment pressure and radiation levels. The cause of this transient is a SGTR in the 1A sg due to the feedline break transient. The crew manually actuates safety injection and reenters EEP-0 in response to the accident. The containment doserate indicates the need to upgrade the emergency classification to a **SITE AREA EMERGENCY**. Once declared the plant staff should begin taking actions for a Site Area emergency based on EIP-9.0 while the crew stabilizes RCS temperature and commences RCS depressurazation actions to decrease the break flow using the ERPs and SOPs.

At 1005 indications of release from containment to the environment through the penetration room are observed along with indications of loss of instrument air to the

penetration room and containment. The crew enters AOP-6.0 to mitigate the loss of instrument air pressure and is able to stabilize pressurizer level and regain instrument air pressure in the penetration room. Opening of HV-3611 to restore air to containment has been found to result in isolation of instrument air to the penetration room so the crew should decide to leave HV-3611 closed and align backup air to containment. The release path to environment is via the instrument air line penetration. Plant staff should declare a **GENERAL EMERGENCY** and begin taking actions for a General emergency based on EIP-9.0.

It is anticipated that the leak from containment cannot be stopped prior to the end of the exercise due to high dose rates in the areas where work would need to be performed.

The News Media Center (NMC) will be activated and staffed by representatives from SNC, APC, the State of Alabama, the State of Georgia, the State of Florida, Houston County, and Early County. Media and public interest will be simulated and news releases will be prepared and released.

The exercise will terminate once the radiation monitoring teams have tracked the plume, the EOF has been staffed and is performing EOF activities and the NMC has conducted a press conference. The termination will be coordinated with the States of Alabama, Georgia, and Florida if occurring prior to 1300 Central time.