

U.S. NUCLEAR REGULATORY COMMISSION (NRC)

REGION II

Docket Nos: 50-348 and 50-364

License Nos: NPF-2 and NPF-8

Report No: 50-348/97-14 and 50-364/97-14

Licensee: Southern Nuclear Operating Company (SNC)

Facility: Farley Nuclear Plant (FNP), Units 1 and 2

Location: 7388 North State Highway 95  
Columbia, AL 36319

Dates: October 19 through November 29, 1997

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(Sections R1.1, R1.2, R1.3, R1.4, R1.5, R3.1,  
R8.1, R8.2, and R8.3)  
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(Section E8.1)

Approved by: J. Johnson, Director  
Division of Reactor Projects

Enclosure 2

## EXECUTIVE SUMMARY

Farley Nuclear Power Plant, Units 1 and 2  
NRC Inspection Report 50-348/97-14, 50-364/97-14

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

### Operations

- Operator attentiveness to main control board (MCB) annunciator alarms and response to changing plant conditions were prompt. Management's persistent efforts to reduce the number of MCB deficiencies and achieve "blackboard" remained evident. Operating crews demonstrated a high level of awareness of plant conditions and ongoing activities. Shift supervisor command and control functions and operations management oversight were evident (Section 01.1).
- Overall material conditions for Unit 1 and Unit 2 structures, systems and components (SSCs) were good. However, physical and material conditions of the service water intake structure (SWIS), especially the lower level, have degraded (Section 02.1).
- Safety system walkdowns and tours verified that accessible portions of selected systems were adequately maintained and operational (Section 02.2).
- Safety tagging activities were correct and met procedural requirements (Section 02.3).
- A non-cited violation (NCV) was identified for inadequate implementation of the cold weather protection procedures. In addition, an Operations supervisor and management on day shift were not well-informed about the progress of the procedures (Section 02.7).

### Maintenance

- Maintenance and surveillance testing activities were generally conducted in a thorough and competent manner by qualified individuals in accordance with plant procedures and work instructions (Section M1.1).
- A NCV was identified for maintenance technicians failing to sign-off steps in "Continuous Use" procedures as they were accomplished (Section M1.1).
- The 1-2A Diesel Generator maintenance outage was performed by well qualified and knowledgeable personnel. Corrective action efforts were thorough. Post maintenance testing was satisfactorily completed (Section M1.2).

- A violation was identified for failure to take adequate corrective actions to maintain the main steam valve room cork seal flooding barrier (Section M8.1).
- Licensee corrective actions to-date to address multiple pre-action sprinkler system failures identified in 1996 have been comprehensive, thorough and generally successful. An additional corrective action plan has been initiated to resolve the small number of remaining failures (Section M8.2).
- A non-cited violation was issued for failure to follow work control procedures which resulted in inoperability of automatic turbine building isolation (Section M8.4).

### Engineering

- Licensee management met with the NRC in Rockville, Maryland to discuss current progress and schedules of the Steam Generator Replacement Projects for the Unit 1 during Spring 2000 and Unit 2 during Spring 2001. During the meeting the licensee provided a comprehensive summary presentation of its schedule, scope of work, organization, proposed licensing submittals, and engineering plans (Section E1.1).
- A violation was identified for lack of tornado missile protection for the Turbine-Driven Auxiliary Feedwater (TDAFW) pump vent stack. (Section E8.1)

### Plant Support

- Radiological controls, area postings and container labels were maintained in accordance with Technical Specification (TS) and 10 CFR 20, Appendix J, requirements. Improvements were noted for Radiological Controlled Area housekeeping and cleanliness and for Radiological Work Permit practices. Revisions to local area radiation survey map for the Unit 1 SFP area were timely. For U1RF14 outage, ALARA program activities were implemented in accordance with approved procedures. Actual U1RF14 outage dose expenditure exceeded original estimates and resulted from an increased scope of steam generator maintenance activities (Section R1.1).
- Worker deep dose equivalent (DDE) and shallow dose equivalent (SDE) exposures resulting from personnel contamination events and work activities during the U1RF14 outage were evaluated properly and were within 10 CFR 20.1201 limits (Section R1.2).
- Controls for minimizing workers' internal exposure were effective (Section R1.3).
- Surveillance requirements for the inoperable U1 RE-60B monitor were completed in accordance with approved procedures (Section R1.4).



- Licensee program guidance for transportation of radioactive waste and materials met 10 CFR 71.5 and recently revised DOT 49 CFR Parts 100-179 requirements. Transportation program guidance was implemented effectively (Section R1.5).
- Records for determining workers' prior yearly occupational exposures and granting extensions to administrative exposure limits were established in accordance with 10 CFR Part 20, Subpart L requirements and administrative procedures (Section R3.1).
- A NCV was identified for Failure to Conduct Compensatory Grab Sampling for Inoperable Unit 2 Containment Atmospheric Radiation Monitoring System in accordance with TS 3.4.7.1 (Section R8.3).
- Licensee corrective actions for failing to staff the Emergency Operations Facility (EOF) within the required time frame were prompt and thorough. The licensee successfully demonstrated the ability to activate the alternate EOF (Section P1.1).
- Security personnel observed during the inspection period were attentive to their responsibilities. Site security systems were adequate to ensure physical protection of the plant (Section S1.1).
- A technician willfully failed to conduct at least three required inspections, and deliberately falsified at least four checklists. This non-repetitive, licensee-identified and corrected violation was identified as a NCV (Section P8).



## Report Details

### Summary of Plant Status

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

Unit 2 operated continuously at 100% power for the entire inspection period.

### I. Operations

#### 01 Conduct of Operations

##### 01.1 Routine Observations of Control Room Operations

###### a. Inspection Scope (71707)

Inspectors conducted frequent inspections of ongoing plant operations in the Main Control Room (MCR) to verify proper staffing, operator attentiveness, adherence to approved operating procedures, communications, and command and control of operator activities. Inspectors reviewed operator logs and Technical Specification (TS) Limiting Conditions of Operation (LCO) tracking sheets, walked down the Main Control Boards (MCBs), and interviewed members of the operating shift crews to verify operational safety and compliance with TSs. The inspectors frequently attended morning plant status meetings and shift turnover meetings to maintain awareness of overall facility operations, maintenance activities, and recent plant evolutions. Morning reports and Occurrence Reports (OR) were reviewed on a routine basis to assure that the licensee properly tracked, reported, and resolved potential operational safety concerns.

###### b. Observations and Findings

Overall control and awareness of plant conditions during the inspection period remained a strength. Inspectors observed that the Unit 1 MCB annunciators and Balance of Plant (BOP) and emergency power board (EPB) alarm panels were frequently "blackboard." However, the Unit 2 MCBs and BOP panels continued to have some persistent annunciators lighted for known equipment problems. Management efforts to maintain MCB deficiencies at low levels continued. The combined MCB deficiencies on Unit 1 and Unit 2 have dropped below 10, the lowest level in several years. Most of the deficiencies involved non-safety related instrumentation or equipment, and none resulted in a TS LCO.

Operator attentiveness to MCB annunciator alarms and response to changing plant conditions were prompt and effective. Interviews with members of the operating crew verified that they were consistently aware of plant conditions and ongoing activities. Operator knowledge was very good. Operator logs were of sufficient detail and scope. Shift staffing was verified to be in compliance with procedural and TS requirements. Pre-shift briefings of the operating crews by the shift supervisors (SS) were generally concise, informative, and provided

operators with shift direction and priorities. Shift turnovers were accomplished in an orderly manner, following a board walkdown by the off-going and on-coming operators and SSs.

Routine reactivity manipulations by the operators (i.e., boron dilutions of the reactor coolant system (RCS)) were observed by the inspectors. The operators notified the applicable SS prior to each manipulation, as required by procedure.

c. Conclusions

Control Room professionalism and communications remained good. Operating crew demeanor, team work and conduct were business-like and effective. Unnecessary activities were kept out of the "Controls Area." Unit SS command and control, and operations management oversight were evident.

Operator attentiveness to MCB annunciator alarms and response to changing plant conditions were prompt. Management's efforts to achieve "blackboard" conditions and reduce the number of MCB deficiencies remained evident. The operating crew consistently demonstrated a high level of awareness of existing plant conditions and ongoing plant activities.

02 Operational Status of Facilities and Equipment

02.1 General Tours of Specific Safety-Related Areas (71707)

General tours of safety-related areas were performed by the inspectors throughout both units to examine the physical condition of plant equipment and structures, and to verify that safety systems were properly aligned. These general walkdowns included the accessible portions of safety-related structures, systems, and components (SSC).

Overall material conditions for Unit 1 and Unit 2 SSCs were good. Almost all plant areas were clear of trash and debris. Minor equipment and housekeeping problems identified by the inspectors during their routine tours were reported to the responsible SS and/or maintenance department for resolution. These problems included improper storage of combustible materials, minor boric acid leaks and/or deposits, unsecured items located near safety-related equipment, corroded components, etc. None of the problems constituted a significant safety or compliance issue. Two such findings identified by the inspectors during routine plant tours included the following:

- Physical and material conditions of the service water intake structure (SWIS), especially the lower level, have degraded

considerably since past efforts to improve this area. Specific inspector observations included: 1) multiple roof leaks (upper and lower levels) that resulted in flooding of floor spaces, 2) service water system (SWS) pump discharge pipe exhibits surface rust where it penetrates the floor, 3) corrosion and pitting of SWS discharge piping was still evident inside the penetration of the north wall of SWIS, and 4) physical and material conditions of the lower level have degraded appreciably - soiled floors, spider webs, system leaks with associated wet floors, and painted-over rust on many system components (especially SWS strainers).

- A minor electro-hydraulic control (EHC) fluid leak (1 to 2 drops/minute) from the 2B intercept valve, identified by Deficiency Report (DR) 547529, appeared to have gotten worse. Also, the leak was being captured by adsorbents that were saturated, resulting in a floor spill. Aside from a slipping hazard, the use of adsorbents was not consistent with the Material Safety Data Sheet (MSDS) for Fyrquel, which recommended using inert material to absorb leaks/spills.

On November 20, 1997, an inspector accompanied a system operator (SO) on a watchstation tour of the Diesel Generator (DG) Building, which included: all the DG rooms, the switchgear rooms, the fuel oil storage tank rooms, Unit 1 circulating water pump area, and the Unit 1 and Unit 2 reactor make-up water storage tank (RMWST). The SO was knowledgeable of the multiple DG systems and conscientiously completed his logs. However, the SO's attention was focused on taking logs and did not specifically look for any unexpected equipment or material condition problems.

## 12.2 Biweekly Inspections of Safety Systems (71707)

The inspectors verified the operability of the following selected safety systems and/or equipment:

- Unit 1 spent fuel pool cooling and purification system, Trains A and B
- Unit 2 spent fuel pool cooling and purification system, Trains A and B
- Unit 2 auxiliary feed water (AFW) system

Accessible portions of these systems were verified to be properly aligned. The inspectors also observed that they were adequately maintained and in good operating condition. The inspectors did not identify any issues that adversely affected system operability. Minor deficiencies were noted and discussed with the appropriate shift supervisor.



### 02.3 Verification of Safety Tagging

#### a. Inspection Scope (71707)

The inspectors verified that selected tagouts were implemented in accordance with procedural requirements. The inspectors reviewed and walked down selected components tagged by the following tag orders (TOs):

- TO# 97-2018-1, Incore Detection System
- TO# 97-2726-1, Condensate Storage Tank (CST) Freeze Protection
- TO# 96-2121-1, RMWST Degas System
- TO# 97-1118-1, RMWST System
- TO# 97-2773-2, Incore Detection Panel
- TO# 97-2514-1, 1A Component Cooling Water (CCW) Pump
- TO# 97-2582-2, Train A SWS Strainer
- TO# 97-2586-2, 2A Residual Heat Removal (RHR) Pump
- TO# 97-2574-1, Unit 1 Containment Purge and Mini-Purge
- TO# 97-2620-1, 1A SWS Pump
- TO# 97-2710-1, 1A SWS Pump

#### b. Observations and Findings

The inspectors verified that the components identified on the tag orders were properly tagged. The identifications were correct and the tags were conspicuously placed, and did not obscure control room panel indications. The administrative aspects of filling out the tagging order forms were complete and correct. The tags placed were adequate for personnel safety and equipment protection.

#### c. Conclusion

The inspectors concluded that the reviewed safety tagging activities were correct and met the procedural requirements. The administrative aspects of the tagging orders were complete and accurate. The tags placed were adequate for personnel safety and equipment protection.

### 02.4 TS LCO Tracking (71707)

The inspectors routinely reviewed the TS LCO tracking sheets filled out by the shift foremen. All tracking sheets for Units 1 and 2 reviewed by the inspectors were consistent with plant conditions and TS requirements.

### 02.5 Operation of Dual Function Containment Isolation Valves (Temporary Inspection (TI) 2515/136)

A list of all containment isolation valves (CIVs) was provided by Updated Final Safety Analysis Report (UFSAR) Table 6.2-31, Containment Isolation Valve Information. In Table 6.2-31, dual function CIVs were

identified as those CIVs whose post-loss of coolant accident (LOCA) position was specified as "Open." These dual function valves were verified with the licensee and no differences were noted. The inspector also verified that all dual function CIVs can be operated from a switch in the MCR, either from the MCBs or the BOP panels. However, in the presence of a Containment Spray (CS) or Safety Injection (SI) signal, these valves will automatically reopen if the operator tries to close them. Once the CS and SI signals are reset, then the dual function CIVs can be closed from the MCR and will remain closed.

All dual function CIVs can be closed from the MCR once the CS and SI signals are reset. However, the licensee has no specific procedural guidance for resetting the CS or SI signal in the presence of a valid demand. Current emergency response procedures only address resetting CS and SI signals once the termination criteria are met. The inspector discussed this procedure deficiency with plant management. By the conclusion of this inspection period, management believed it to be a generic issue and had chosen to pursue resolution through the Westinghouse Owners Group.

#### 02.6 Seismic Event In South Alabama (71707)

On October 24, 1997, the National Earthquake Information Center reported that an earthquake had occurred in southern Alabama at 7:35 a.m. Central Daylight Time (CDT). The magnitude of the earthquake was measured at 4.9 on the Richter scale, and its epicenter was located about 120 miles due west of the plant near Brewton, Alabama. Plant personnel did not notice any ground movement. Also, a subsequent walkdown of the site seismic instrumentation revealed no indication that the earthquake tremors had been detected. Resident inspector tours verified that selected seismic detectors appeared operational and there was no evidence of earthquake damage.

#### 02.7 Cold Weather Preparations (71714)

##### a. Inspection Scope

From November 15 through November 18, the plant experienced several consecutive days where the daily low temperatures dropped below freezing. The lowest temperatures observed were approximately 28 degrees Fahrenheit (°F) during the early morning hours before sunrise. The inspectors reviewed abnormal operating procedure FNP-0-AOP-21.0, "Severe Weather," Revision (Rev.) 13, toured freeze protection systems around the plant, and interviewed responsible personnel.

b. Observations and Findings

During this inspection a number of findings were identified, including:

- Operators did not log entry into FNP-O-AOP-21.0 for temperatures at or below 33 °F.
- Step 11.0 of FNP-O-AOP-21.0, "Extreme Cold Weather Contingencies," states that Appendix I will be performed as necessary if temperatures are forecast to be at or below 33 °F within the next 24 hours. The inspectors discovered that major portions of Appendix I were still incomplete on November 17, and some were not complete by the end of this report period. In particular, system operators had not checked the status of freeze protection system (i.e., heat tracing) monitor lights during their rounds. Also, the maintenance department personnel had not completed their inspections and functional testing of the plant heat tracing systems in accordance with electrical maintenance procedure FNP-1-EMP-1383.01, "Freeze Protection Inspections," Rev. 5. After discussions with the acting Operations Manager, SOs were directed to perform tours of the plant heat tracing circuits per item 2 of FNP-O-AOP-21.0, Appendix I. Discussions with the acting Maintenance Manager revealed that the schedule for completing EMP-1383.01 would be on or around December 5.
- Tours by the inspectors, and later the SOs, identified numerous heat tracing indicator lights that were not lighted during cold weather. These circuits were intended to actuate at or below 40 °F. Between both units, there were about 200 heat tracing circuit indicator lights, of which almost one half were not lighted during subfreezing temperatures. However, of the approximately 100 non-functioning indicator lights, about one third of these were partially shielded from the environment and may not have experienced sufficiently low temperatures.
- Operations supervision and management on dayshift were not well-informed about the progress of FNP-O-AOP-21.0 implementation.
- Even though the latest revision to Appendix I that added Tables 1 through 7 was a considerable improvement over the previous revision, an inspector noticed that the tabular location lists of the heat tracing circuits and indicator lights of EMP-1383.01 and FNP-O-AOP-21.0 were not consistent.

Although the weather was not cold enough for a long enough period of time to represent a significant problem, licensee implementation of FNP-O-AOP-21.0 was considered poor, especially in light of the problems experienced during the previous year. (Refer to Non-Cited Violation (NCV) 50-348, 364/96-15-02, Inadequate Procedural Guidance For Freeze Protection, of Inspection Report (IR) 50-348, 364/96-15.) For the



freeze protection program this year, the procedural guidance was adequate. The inspectors identified that licensee personnel failed to adequately implement FNP-0-AOP-21.0, Appendix I, as required by TS 6.8.1.a. This constituted a violation of minor significance and is identified as NCV 50-348, 364/97-14-01, Inadequate Implementation of Cold Water Protection Program, consistent with Section IV of the NRC Enforcement Policy.

c. Conclusions

Licensee efforts to implement its cold weather protection procedures prior to subfreezing temperatures were not timely and operations supervision and management on day shift were not well-informed about the progress of the procedures. Non-Cited Violation 50-348, 364/97-14-01, Inadequate Implementation of Cold Weather Protection Procedures, was identified.

06 Operations Organization and Administration

06.1 Peer Review by World Association of Nuclear Operators (71707 and 40500)

One of the inspectors reviewed the World Association of Nuclear Operators (WANO) Interim Report dated September 16, 1997, regarding the peer review conducted onsite during the month of July 1997. The inspector concluded that the WANO report did not identify any important safety issues which would require NRC follow-up action. Furthermore, the WANO findings did not warrant a significant reassessment of NRC perspectives regarding licensee performance.

## II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (61726 and 62707)

The inspectors observed and reviewed portions of various licensee corrective and preventive maintenance activities, and witnessed routine surveillance testing to determine conformance with plant procedures, work instructions, industry codes and standards, Technical Specifications (TSs), and regulatory requirements. The inspectors observed all or portions of the following maintenance and surveillance activities, as identified by their associated work order (WO), work authorization (WA), maintenance procedure, or surveillance test procedure (STP):

- FNP-2-FSP-63.05, "Visual Inspection of Penetration Fire Barriers"
- FNP-2-STP-11.6, "Residual Heat Removal Valves Inservice Test"

- FNP-0-IMP-226.13, "1-2A EDG Load Stability Test"
- FNP-0-STP-26.0B, Revision (Rev.) 12, "Control Room Train B Ventilation Operability Test"
- FNP-1-STP-20.2, Rev. 8, "Penetration Room Filtration System Train A(B) Monthly Operability Test"
- FNP-0-EMP-1370.01, Rev. 4, "Cable Termination, Splicing, and Repair"
- FNP-1-MP-42.G, Rev 8, "Maintenance of Byron Jackson Service Water Pumps (Q1P16P001A, B, C, D, E)"
- FNP-0-EMP-1530.01, Rev. 8, "General Motor Maintenance"
- FNP-0-EMP-1701.01, Rev. 5, "Electrical Equipment Condition Test"
- WA# W00486998, SW Train 'B' Low Pressure Alarm Pressure Switch
- FNP-0-IMP-425.3, Rev 4, "Pressure Actuated Switches (Generic)"
- FNP-2-STP-914, Rev. 5, "Auxiliary Building Battery Charger Load Test"
- FNP-2-EMP-1341.06, Rev. 5, "Auxiliary Building Battery Charger Inspection"
- FNP-2-STP-73.1, Rev. 2, "Hot ShutDown Panel Operability Verification"
- FNP-1-EMP-1383.01, Rev. 5, "Freeze Protection Inspection"
- FNP-0-FSP-57, Rev. 3, "Low Pressure CO2 Systems"
- FNP-0-STP-26.0A, Rev. 11, "Control Room Train A Ventilation Operability Test"
- FNP-1-STP-16.1, Rev. 30, "Containment Spray Pump 1A Inservice Test"
- WO# W000486924, 2A RHR Pump Motor Maintenance and Supply Breaker Megger Test
- FNP-0-ETP-3616, Rev. 11, "Monthly Surveillance Flux Map Data Collection" for Unit 1
- FNP-2-STP-201.18, Rev. 34, "Reactor Coolant System TE412B1, TE412B2, TE412B3 and TE412D Functional Test"
- FNP-0-STP-80.6, Rev.12, "Diesel Generator 1-2A 24 hour Load Test"
- WO# M97007636, Unit 2 Power Range Channel NI-42 Isolator Amplifier Replacement
- FNP-2-STP-22.2, Rev. 10, "2B Motor-driven Auxiliary Feedwater Pump Quarterly Inservice Test"

b. Observations and Findings

All observed maintenance work and surveillance testing was performed in accordance with work instructions, procedures, and applicable clearance controls. In general, 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 Main Control Room (MCR). Overall, operators, technicians, and craftsman were observed to be knowledgeable.

experienced, and well-trained for the tasks performed. However, the inspectors observed the following four instances where personnel were not signing off procedure steps as they were completed:

- On November 19, 1997, the inspectors observed a limited portion of WA #492443 to calibrate Q2E23PIC3532 per FNP-0-IMP-401.2, "Fisher 4150 and 4160 Controller Calibration (Generic)," Rev. 7. The inspectors reviewed the work package and noted that, although the technicians were on step 7.3, they had not signed off the steps which were already completed, including the sign-off for meeting the initial conditions. IMP-401.2 was designated as a "Continuous Use" procedure. One of the procedure usage requirements for a "Continuous Use" procedure, as stated on the procedure cover page, was that "Work permitting, each step is to be signed off as complete before proceeding to the next step." The inspectors reviewed the procedure and did not identify any work conditions which would preclude signing off the completed steps as they were performed. The inspectors did not identify any problems nor indications that the steps which were not signed off had not been performed.
- On November 21, 1997, the inspectors observed part of WA# W00486998, SW Train B Low Pressure Alarm Pressure Switch, per FNP-0-IMP-425.3, Rev. 4, "Pressure Actuated Switches (Generic)" for Q2P16PS0503 in Unit 2 valve box #1. FNP-0-IMP-425.3 was defined as a "Continuous Use" procedure. The Confined Space Entry Sheet was satisfactorily completed. Work was in progress and the inspectors observed that the procedure steps were not being initialed as they were accomplished. The inspectors also observed that WA# W00486947 for TPNS Q2P16PS0502 was already completed, but only the initial condition step had been signed off. Workers were knowledgeable of the job and familiar with the requirement to sign off the steps as they were performed. However, they stated that they had concentrated on the tasks at hand and had forgotten to ensure that the steps were properly signed off.
- During the 1-2A Diesel Generator outage, the inspectors reviewed the work package and associated procedures for the ongoing job. During this review, the inspectors identified several minor administrative discrepancies, including procedure steps that were complete but not as yet signed off in the MP-14.1 "Continuous Use" procedure.
- On November 26, 1997, the inspectors observed portions of the 1A SWS pump motor replacement. During the review, the inspectors identified several steps of the EMP-1370.01 data sheet for termination of the pump motor that were complete, but not signed off as required by a "Continuous Use" procedure.



These observations were brought to the attention of maintenance management who then discussed them with the various maintenance teams, stressing the requirement to sign-off steps as accomplished for "Continuous Use" procedures. Additionally, maintenance personnel provided feedback to management concerning the quality and expectations of procedures.

Failure to initial procedure steps as they are performed, before proceeding to the next step, is contrary to the procedure usage requirements stamped on "Continuous Use" procedures. This requirement ensures that critical procedure steps are performed in a deliberate and methodical step-by-step manner. Since no procedure steps were missed or performed out of sequence, the safety significance of the observed examples was minor. As such, this failure to follow procedure constituted a violation of minor significance and is being treated as a NCV consistent with Section IV of the NRC Enforcement Policy. This is identified as NCV 50-348, 364/97-14-02, Failure To Sign Off Steps For Continuous Use Procedures as They Are Performed.

c. Conclusions

Maintenance and surveillance testing activities were generally conducted in a thorough and competent manner by qualified individuals in accordance with plant procedures and work instructions. A NCV was identified for maintenance technicians failing to sign-off steps in "Continuous Use" procedures as they were accomplished.

M1.2 1-2A Diesel Generator 18-Month Outage

a. Inspection Scope (62707)

The inspectors reviewed the work packages and observed portions of the 1-2A Emergency Diesel Generator (EDG) 18-month outage, which included: lube oil heat exchanger tube bundle replacement; jacket water heat exchanger tube bundle replacement; fuel injector replacement; exhaust system repair and replacement; and various other 18-month inspections.

b. Observations and Findings

Overall work was performed well, with maintenance supervision constantly on-station to oversee work activities and review the work status. Workers were diligent in maintaining foreign material exclusion covers over open components. The licensee continued its practice of having a COLTECH vendor representative on-site during major EDG outages, which aided in rapid resolution of technical issues.

The 1-2A EDG equipment outage progressed without significant difficulty. One of the initial equipment problems targeted for repair was the exhaust system which had several leaks that actually made the EDG room uninhabitable for extended periods due to fumes. During maintenance it

was determined that the exhaust leaks had seriously damaged the engine cylinder thermocouples. Most of these thermocouples were repaired, but some were left for repair during the next 1-2A EDG outage. All the exhaust system leaks were repaired.

During the return to service of the 1-2A EDG, mechanics discovered that the #9 fuel injector pump was not operating and several minor fuel oil leaks were identified on injectors #2, #3, and #12. In addition to these minor problems, the EDG output breaker would not close from the EPB handswitch during the performance of the 1-2A EDG operability test. The cause was believed to be a contact in the handswitch circuit that failed to close when the switch was operated. However, the licensee was unable to repeat the problem and a conclusive root cause determination was not made. Also, during a maintenance run, the EDG tripped due to low lube oil pressure, caused by debris buildup in the strainer. The debris was believed to be from material that was scrapped off the lube oil heat exchanger during the tube bundle replacement. Each of these items was corrected prior to declaring the 1-2A EDG operable.

c. Conclusion

Maintenance work was performed by well-qualified and knowledgeable personnel. Corrective action efforts were thorough. Post-maintenance testing was satisfactorily completed.

M6 Maintenance Organization and Administration

M6.1 Scheduling Of On-Line Maintenance (62707)

The inspectors reviewed the Unit 1 Equipment Outage Forecast, Rev. 0 for December 1 - 7, 1997, issued on November 25, 1997. The inspectors noticed that the licensee had scheduled FNP-1-STP-73.1, "Hot Shutdown Panel Testing," for December 1, 1997. The planning department had determined that implementation of certain steps of FNP-1-STP-73.1 would involve significant risk based on risk-achievement worth (RAW) values generated by their equipment out-of-service (EOOS) risk monitor. Although the vast majority of hot shutdown panel (HSDP) testing had RAW values well within the bounds established by ACP-52.1, "Guidelines For Scheduling of On-Line Maintenance," Rev. 4, there were several steps of FNP-1-STP-73.1 with RAW values over 10 (one as high as 18.6). These values were calculated even though Operations and Planning personnel had made efforts (i.e., test procedure changes) to reduce the potential risks associated with on-line HSDP testing. The guidelines of ACP-52.1, Section 4.2, do not currently allow for conducting on-line maintenance or testing if the RAW value exceeds 10. Concerns regarding HSDP testing with high RAW values were also expressed by Operations personnel. The inspectors discussed this testing with plant management, including compensatory measures consistent with ACP-52.1. Plant management decided to reschedule the high risk portions of FNP-1-STP-73.1 until the next outage.

## M8 Miscellaneous Maintenance Issues (90712, 92700 and 92902)

M8.1 (Closed) Licensee Event Report (LER) 50-348, 364/97-07; Outside Of Design Basis Due To Degraded Cork Material

On June 22, 1996, December 10, 1996, and April 17, 1997, licensee personnel identified that some of the self-expanding cork sealing material was missing from the area between the main steam valve room (MSVR) and containment. On each date, Deficiency Reports (DRs) were written. The areas identified on April 17 in the MSVR, and the amount of material missing or degraded:

Unit 1:	"B" Bay - 2 in by 20 ft
	"C" Bay - 4 in by 6 in
Unit 2:	"A" Bay - 4 in by 6 ft
	"B" Bay - 4 in by 4 ft
	"C" Bay - 4 in by 4 ft

Although the missing and degraded cork seal had been previously identified in 1996, its significance as a flood barrier was not recognized until after April 17, 1997, due to the questioning attitude of a licensed senior reactor operator. Initial licensee concerns regarding the cork seal, used elsewhere in the auxiliary building, centered around its function as a fire barrier and as a pressure seal for the penetration room boundary (See Inspection Report (IR) 50-348, 364/97-04). On April 22, the licensee determined that the missing cork represented a condition outside the design basis and reported this condition in LER 50-348, 364/97-007.

The missing cork would allow water from a main feed line break to flood the lower level equipment room (LLER) which contains the turbine-driven auxiliary feedwater (TDAFW) pump, thus rendering the TDAFW pump inoperable. This accident, combined with a single failure of a motor-driven auxiliary feedwater (MDAFW) pump, would leave the plant with only one operable MDAFW pump. The Condition IV - Limiting Faults accident analysis of UFSAR Section 15.4.2.2, "Major Rupture of a Main Feedwater Pipe," assumed that two MDAFW pumps would be necessary to provide adequate AFW flow. Further analysis of the AFW system requirements for Main Feedwater (MFW) line breaks was documented in As-Built Notice (ABN) 93-0-0224. This analysis concluded that one MDAFW pump provided adequate flow to the intact Steam Generators (SGs) once the faulted SG was isolated. Thus, if a MFW line break had occurred while the cork seal was degraded, coincident with a single failure of a MDAFW pump, the current main feedwater line break accident analysis could not be met. However, prompt operator action (i.e., to isolate the faulted SG) per the Emergency Operating Procedures (EOPs) would mitigate this event by allowing the single MDAFW pump to provide the required AFW flow to the intact SGs.



The very low probability of a MFW line break occurring coincident with a single failure of a MDAFW pump was calculated by the licensee to be  $4.75E-5$  per reactor year. This number was based on all failure modes for the MDAFW pump (including electric power). Furthermore, the plant emergency response procedures (ERPs) provide direct instructions for isolating a faulted steam generator. An inspector reviewed the ERPs and determined that the faulted SG could be identified and isolated promptly (i.e., less than 10 minutes). Once the faulted SG was isolated, the remaining MDAFW pump would have adequate capacity. Considering the very low probability, and the operators' ability to mitigate this accident, the inspectors concluded that the safety impact of degraded cork in the MSVR was minimal.

When identified in 1996, it was evident that the missing and degraded cork sealing material had been in this condition for many years. Degradation of the cork seal used throughout the auxiliary building has been recognized as a problem as early as 1985. Numerous DRs have been written regarding degradation of the cork seal in the auxiliary building. However, no comprehensive repairs or periodic inspections were initiated. The oldest outstanding deficiency report (i.e., DR 211386) was written in March 1990 for degraded cork between the auxiliary building and containment. This and other DRs were still open when the issue was identified again regarding the MSVR in April 1997. The missing and degraded cork seal in the Unit 2 MSVR was specifically identified on December 10, 1996 (DR 96006033), but was not adequately addressed until a senior reactor operator questioned the problem when it was re-identified on April 17, 1997. This issue was also similar to the licensee's failure to recognize and correct degradation of the cork seal that maintained the penetration room boundary (PRB) as documented in IR 50-348, 364/97-04. For the PRB issue, a Predecisional Enforcement Conference was held, resulting in several severity level IV violations, one of which was for inadequate corrective action.

The following corrective actions were described in LER 50-348, 364/97-07 and verified by the inspectors:

- 1) Cork seal repairs on Unit 2 were completed by April 21, 1997. The Unit 1 cork seal was replaced with a foam seal prior to restart from its last refueling outage in June 1997.
- 2) Maintenance procedure FNP-1/2-MP-29.0, "Visual Inspection Of Auxiliary To Containment Building Seismic Joint Seal (Main Steam Valve Room)," Rev. 0, was developed and issued June 6, 1997 to inspect the MSVR cork seal every 18 months.
- 3) Personnel reviewing DRs for operability reviewed LER 50-348, 364/97-007.

4) The entire corrective maintenance backlog was reviewed to ensure proper prioritization of outstanding DRs/WOs for scheduling work.

Comprehensive inspections of the cork seal have been conducted throughout the auxiliary building and all repair work has been completed, or scheduled with appropriate compensatory measures in place (i.e., fire watches). The licensee is developing additional periodic cork seal inspection procedures for all auxiliary building areas outside the MSVR. These procedures are scheduled to be completed by December 19, 1997.

10 CFR Part 50, Appendix B, Criterion XVI; Updated Final Safety Analysis Report, Section 17.2; and the Operations Quality Assurance Policy Manual, Chapter 16, require that appropriate measures be taken to assure that conditions adverse to quality are promptly identified and corrected. Failure to take adequate corrective actions is identified as violation (VIO) 50-348, 364/97-14-03, Inadequate Corrective Actions for Maintaining Main Steam Valve Room Cork Seal Flooding Barrier.

M8.2 (Closed) Inspector Followup Item (IFI) 50-348, 364/96-02-03: Pre-Action Sprinkler System Failures

In 1996, two incident reports (FNPIRs) were initiated (i.e., FNPIRs 1-96-71 and 2-96-78) and a root cause team was assembled to address the problems associated with multiple pre-action sprinkler system failures. Although the root cause was not conclusively identified, the root cause team recommended numerous corrective actions that have been implemented. These corrective actions included system flushes; detailed inspections, measurements, and cleaning of multistatic valve internals; replacement of critical mechanical and electrical components; revised surveillance procedures; and increased surveillance testing. Over the past two years, the inspectors have observed aspects of these corrective actions for selected pre-action sprinkler systems. The inspectors reviewed the completed FNPIRs identified above and a history report of all the corrective action commitments to confirm that they were completed. The inspectors also reviewed intracompany memorandum NEL-97-0476, dated November 17, 1997, that summarized the corrective actions already taken and established an additional corrective action plan with detailed actions, responsibilities, and a schedule. The inspectors have also reviewed the history of surveillance test results since August 1996 which demonstrated dramatic reductions in component (e.g., multistatic valve - clappers and solenoid valves) failures. However, certain system failures have continued to occur that will be addressed as part of the corrective action plan of NEL 97-0476, scheduled to be finished by July 31, 1998.

Licensee corrective actions to-date to address multiple pre-action sprinkler system failures identified in 1996 have been comprehensive, thorough and generally successful. An additional corrective action plan

has been initiated to resolve the small number of remaining failures. This IFI is considered closed.

MB.3 (Closed) LER 50-348, 364/96-01: TS Action Statement Requirement Not Met For SSPS Testing

The circumstances surrounding this LER and associated corrective actions were previously inspected and verified (see IR 50-348, 364/96-03, Section 3.2.c). This LER is considered closed.

MB.4 (Closed) LER 50-348/97-011: Entry Into TS 3.0.3 Due to the Failure to Follow the Work Control Process Procedure

a. Inspection Scope (92902)

The inspectors reviewed LER 50-348/97-011 and associated maintenance WOs, Occurrence Reports (ORs), LCO Status Sheets, and Training Attendance Sheets.

b. Observations and Findings

LER 50-348/97-11, documents an event where failure to follow procedure associated with controlling the work process, caused Unit 1 to enter a condition prohibited by TS. Technical Specification 3.7.4 requires two independent Service Water System (SWS) loops be maintained operable. However, both trains of the automatic isolation capability of the motor operated valves (MOVs) for supplying service water (SW) to the turbine building were made inoperable. TS 3.0.3 was entered for 39 minutes, until operability was restored.

The inspectors reviewed the associated safety assessment and concluded that it adequately addressed the effects of the SWS inoperability. During the time that the automatic isolation function was inoperable, operators were aware of the condition with the SW Motor Operated Valves (MOVs). Any turbine building SW leak that could have jeopardized the heat transfer capability of the SWS or impacted the capability for running the EDGs would have been identified in a timely manner. Operators could have manually isolated SW to the turbine building to ensure adequate SWS flow to safety-related systems.

Corrective actions taken to resolve the issue and prevent recurrence were reviewed by the inspectors. Training concerning the event was provided to Operations and Maintenance department personnel and they were instructed on the need to identify and document specific limits for troubleshooting activities on the work order. This failure to meet the requirements of TS 3.7.4 is identified as NCV 50-348/97-14-04, Entry Into TS 3.0.3 Due to the Failure to Follow the Work Control Process Procedure, consistent with Section VII.B.1 of the NRC Enforcement Policy.



c. Conclusions

A non-cited violation was issued for a failure to follow work control procedures which resulted in inoperability of automatic turbine building isolation. LER 50-348/97-011 is closed.

III. EngineeringE1 Conduct of EngineeringE1.1 Steam Generator Replacement Project (50001 and 37551)

On November 20, 1997, SNC met with the NRC in Rockville, Maryland to discuss current progress and schedules for the Units 1 and 2 Steam Generator Replacement Projects (SGRPs). A resident inspector attended the meeting. The existing Westinghouse Model 51 SGs are currently scheduled to be replaced with the Westinghouse Model 54F design in Spring 2000 for Unit 1 and Spring 2001 for Unit 2. During the meeting, the licensee provided a comprehensive summary presentation of its schedule, scope of work, organization, date for proposed licensing submittals, and engineering plans.

E8 Miscellaneous Engineering IssuesE8.1 (Closed) URI 50-348, 364/97-201-08: Tornado Protection of Turbine-Driven Auxiliary Feed Water (TDAFW) Pump Vent Stack

The inspectors observed that the safety-related TDAFW pump vent stack was installed on the roof of the auxiliary building and was not protected from tornado-generated missiles. Updated Final Safety Analysis Report (UFSAR) Sections 6.5.1, 3.2.1.3, 3.2.1.5, and Table 3.2-1 state that Auxiliary Feed Water (AFW) system equipment and piping are identified as Category I. UFSAR Section 3.5.4 states that Category I equipment and piping outside containment are either housed in Category I structures or buried underground. The NRC has reviewed this issue and concluded that the failure to provide tornado missile protection for the TDAFW pump vent stack, located on the roof of the Auxiliary Building, is a violation of 10 CFR 50 Appendix B, Criterion III, Design Control. This is identified as Violation 50-348, 364/97-14-05, Failure to Provide Tornado Missile Protection for TDAFW Pump Vent Stack.

Based on the above, the unresolved item is considered closed.

IV. Plant Support

## R1 Radiological Protection and Chemistry Controls

## R1.1 Radiological Controls

a. Inspection Scope (83750)

Radiological controls associated with ongoing Unit 1 (U1) and Unit 2 (U2) routine operations were reviewed and evaluated by the inspectors. Reviewed program areas included general housekeeping and cleanliness, area postings, radioactive material and waste (radwaste) container labels, controls for high and loc. ed-high radiation areas, and procedural and radiation work permit (RWP) guidance. Established controls were compared against Updated Final Safety Analysis Report (UFSAR) details and documented procedural requirements to meet applicable sections of Technical Specifications (TSs) and 10 CFR Part 20.

The inspectors made frequent tours of the radiologically controlled areas (RCAs). The inspectors directly observed worker and Health Physics (HP) technician performance and discussed results of radiation and contamination surveys conducted for selected equipment and facility locations. Confirmatory radiation surveys of the U2 Spent Fuel Pool (SFP) heat exchanger areas and radioactive waste storage the U2 truck bay area were reviewed and discussed in detail.

The inspectors discussed and reviewed "As Low as Reasonably Achievable" (ALARA) program implementation, individual worker doses, and dose expenditures associated with the Unit 1 Refueling 14 (U1RF14) outage job evolutions.

b. Observations and Findings

High and locked-high radiation area controls were verified to be implemented in accordance with TS requirements. Postings for radiologically controlled areas were proper and in accordance with TS or 10 CFR 20 Subpart J requirements. Containers holding radwaste, contaminated materials, and equipment were labeled in accordance with 10 CFR 20.1904 requirements. Excluding the U1 SFP heat exchanger area, radiation survey maps of local areas within the auxiliary building accurately reflected radiological conditions. For the U1 SFP heat exchanger and adjacent rooms, the inspectors noted that survey records maintained at the RCA control point were accurate and indicated recent changes in radiological conditions for U1 SFP heat exchanger and adjacent rooms. However, licensee representatives stated that changes to the survey maps posted in the local area were only updated on a bi-weekly basis. The inspectors verified that the subject rooms were posted and controlled properly but that the identified lack of timeliness in revising the locally posted map could cause confusion

regarding the actual radiological conditions within the subject area. Licensee representatives stated that this concern would be reviewed and appropriate actions taken.

From direct observation of work activities, the inspectors verified that workers followed proper radiological controls specified in selected RWPs. In addition, the inspectors noted improvements in housekeeping and cleanliness within the established RCA. Review of licensee data verified that approximately six percent of the RCA continued to be considered contaminated floor space. Licensee representatives stated that continuing decontamination efforts were ongoing to further reduce the RCA contaminated floor space.

The Farley Nuclear Plant UIRF14 Outage report was reviewed and discussed with responsible staff. Implementation of ALARA program activities including initial planning and subsequent review of lessons learned for UIRF14 outage activities was verified. Dose expenditure for outage activities, approximately 246 person-rem, exceeded the original projected dose expenditure of 195 person-rem. The outage duration increased from 52 to 81 days as the result of extensive unplanned steam generator maintenance activities and contributed to the increased dose expenditure.

c. Conclusions

Radiological controls, area postings and container labels were maintained in accordance with TS and 10 CFR 20, Appendix J requirements.

Improvements were noted for RCA housekeeping and cleanliness and for RWP practices.

Revisions to local area radiation survey map for the U1 SFP area were timely.

For UIRF14 outage, ALARA program activities were implemented in accordance with approved procedures.

Actual UIRF14 outage dose expenditure exceeded original estimates and resulted from an increased scope of steam generator maintenance activities.

R1.2 External Exposure (83750)

a. Inspection Scope

The inspectors discussed and reviewed deep dose equivalent (DDE) and shallow dose equivalent (SDE) exposures to workers involved in UIRF14 outage activities. The review included selected workers' Thermoluminescent Dosimeter (TLD) data and personnel contaminations, documented as either Radiation Worker Performance Observations (RWPOs).



i.e., dispersed contamination less than 5000 disintegration per minute per 100 square centimeters (dpm/100cm<sup>2</sup>) and specks with less than 100,000 dpm/probe area, or as personnel contamination events (PCEs), i.e., dispersed contamination greater than or equal to ( $\geq$ ) 5000 dpm/100cm<sup>2</sup> and specks  $\geq$  100,000 dpm/probe area.

Dose assessment methods and assumptions, where applicable, were reviewed for technical adequacy. Dose results were compared against 10 CFR Part 20 limits.

b. Observations and Findings

For outage activities, the maximum total effective dose equivalent (TEDE) was approximately 2386 millirem (mrem) assigned to an individual involved in steam generator maintenance activities. For the outage period, approximately 75 speck and 120 dispersed personnel contaminations were identified in RWPO documents. Approximately 14 PCEs were identified, with only one requiring a skin determination. For the affected individual, a hot particle located on the upper right forearm resulted in an assigned shallow dose equivalent of approximately 10.7 rem. Licensee assumptions and details regarding physical location, length of exposure and isotopic characteristics of particle were appropriate. The inspectors noted that all assigned doses were within 10 CFR 20.1201 limits.

c. Conclusions

Worker DDE and SDE exposures resulting from personnel contamination events and work activities during the U1RF14 outage were evaluated properly and were within 10 CFR 20.1201 limits

R1.3 Internal Exposure (83750)

a. Inspection Scope

The inspectors discussed program guidance for monitoring and evaluating possible internal exposures. Results of selected investigative whole-body count (WBC) analyses conducted during the U1RF14 outage were reviewed in detail.

b. Observations and Findings

From review of WBC analysis records of workers' positive radionuclide intakes, a weakness affecting the accuracy of associated evaluations was identified. The inspectors noted that Farley Nuclear Plant (FNP) Dosimetry (DOS) procedure-307, Rev. 20, Operation and Standardization of the Canberra Nuclear Stand-up Whole Body Counters, dated February 18, 1997, Section (§)4.7.13.2 specified that individuals indicating a potential intake equal to or greater than 10 millirem (mrem) following WBC analyses in paper clothing requires (1) initiation of a DOS Form 921.

Investigative Whole Body Count record, and (2) instructing individuals to return for another count at the beginning of the next work day. Further, the WBC operator was required to ensure that the actual intake date and time was entered into the computerized system. During the review of WBC analysis records, the inspectors identified two individuals whose initial WBC analyses data resulted in an assigned committed effective dose equivalent (CEDE) exceeding 10 mrem, but where subsequent WBC analyses were conducted with improper intake dates and times. That is, for the workers' WBC analyses conducted subsequent to the initial measurements which initially identified the positive radionuclide intakes, WBC system operators input the current dates and times rather than the actual intake dates and times. The inspectors noted that the failure to follow procedures for WBC investigative analyses was a violation of TS 6.8.1. During the week of November 17, 1997, responsible licensee representatives issued a memorandum to all responsible personnel regarding the identified procedural problems and conducted manual calculations using proper event dates and times for the two improper intake evaluations. No significant changes were identified for the calculated CEDEs based on the minimal quantities and long effective half-life of the radionuclides detected. Licensee followup interviews with responsible technicians identified confusion regarding procedural directions and requirements for conducting proper intake evaluations using positive WBC analysis data. Licensee representatives stated that additional training would be provided and that documentation regarding intake event dates and times would be evaluated and improved, as applicable. The inspectors noted that the failure to follow procedures constituted a violation of minor safety significance and, consistent with Section IV of the NRC Enforcement Policy, is identified as Non-Cited Violation (NCV) 50-348, 364/97-14-06: Failure to Follow WBC Analysis Procedures for Evaluation of Workers' Potential Radionuclide Intakes.

The inspectors noted that from March 15 through May 25, 1997, the UIRF14 outage period, approximately 30 investigative WBC analyses were conducted. The analyses were conducted as a result of specific events, usually documented in RWPOs, which could cause or indicate potential radionuclide intakes resulting in internal exposure. The estimated maximum intake was 309 nanocuries (nC<sup>-</sup>), approximately 7.8 derived air concentration-hours (DAC-hrs), resulting in an assigned CEDE of 20 mrem. The inspectors verified the 20 mrem CEDE was added to the deep dose equivalent (DDE) to provide the total effective dose equivalent (TEDE) documented in the individual's official exposure records. No other evaluated worker intakes exceeded 10 mrem, i.e., 0.2 percent of the annual limit of intake (ALI) required to be documented by licensee procedures.

c. Conclusions

The failure to follow procedures for evaluating potential intake of radionuclides was identified as NCV: 50-348,364/97-14-06: Failure to

Follow WBC Analysis Procedures for Evaluation of Workers' Potential Radionuclide Intakes.

Controls for minimizing workers' internal exposure were effective.

#### R1.4 Radiation Monitoring System (RMS) Operability Issues (84750)

##### a. Scope

Status of the Unit 1 (U1) main steam relief and atmospheric steam dump discharge radiation monitor B (RE-60B) operability was reviewed and discussed. The inspectors reviewed and discussed Special Report 97-03-00, U1 Inoperable Radiation Monitor R60-B, and reviewed selected records regarding implementation of the applicable surveillances and compensatory sampling required by the TS action statement.

##### b. Observations

The inspectors verified that, for the inoperable U1 RE-60B monitor, required surveillances verifying U1 Steam Jet Air Ejector (SJAE) monitor R-15A operability were conducted in accordance with the applicable procedures. Backup grab samples were not required for the period reviewed based on operability of the SJAE monitor during that period.

##### c. Conclusions

Surveillance requirements for the inoperable U1 RE-60B monitor were completed in accordance with approved procedures.

#### R1.5 Radioactive Waste and Material Transportation Activities (86750, TI 2515/133)

##### a. Inspection Scope

The inspectors reviewed RCP program activities associated with packaging and subsequent transport of radioactive material and waste from the site. The review evaluated implementation of revised Department of Transportation (DOT) 49 CFR Parts 100-179 and 10 CFR Part 71 regulations. Program implementation based on the completeness and accuracy of shipping documents associated with recent shipping activities was evaluated.

Procedural guidance detailed in recently revised Farley Nuclear Plant (FNP) RCP procedures was reviewed and evaluated against applicable requirements in the revised 49 CFR Parts 100-179 and 10 CFR Part 71 regulations.

- FNP-0-RCP-810, Shipment of Radioactive Waste to Barnwell Burial Site, Rev. 29, issued January 1, 1997.



- FNP-0-RCP-811, Shipment of Radioactive Material, Rev. 20, issued October 28, 1997.
- FNP-0-RCP-888, Health Physics Radwaste Group Forms, Rev. 12, issued October 15, 1997.

Records of selected radioactive waste and material shipments made between June 1, and October 22, 1997, were reviewed and discussed.

b. Observations and Findings

The licensee's procedural guidance met applicable regulatory requirements. Recent revisions to 49 CFR Parts 100-179 and 10 CFR Part 71 regulations were incorporated into approved procedural revisions.

Shipping paper data entries were accurate and completed appropriately.

c. Conclusions

Licensee program guidance for transportation of radioactive waste and materials met 10 CFR 71.5 and recently revised DOT 49 CFR Parts 100-179 requirements.

Transportation program guidance was implemented effectively.

R3 RP&C Procedures and Documentation (83750)

R3.1 Dose Records

a. Inspection Scope

The inspectors reviewed and evaluated licensee program guidance and implementation for determination of current-year prior occupational doses. The inspectors reviewed and discussed NRC Form 4, or equivalent, records for selected contractor personnel involved in U1RF14 outage maintenance activities. In addition, implementation of procedural guidance for extensions to administrative dose limits was evaluated for individuals involved in selected U1RF14 outage activities.

Licensee program guidance and corresponding records were compared against approved procedures and 10 CFR 20 Subpart L requirements, as applicable.

b. Observations and Findings

The inspectors verified that appropriate records of current-year prior occupational doses were available for the selected individuals. Initial estimates of current-year prior doses assigned for deer, skin, extremity, and lens of the eye for each individual worker were conservatively based.

All documentation required for granting administrative dose extensions in accordance with approved procedures was complete and maintained.

c. Conclusions

Records for determining workers' prior yearly occupational exposures and granting extensions to administrative exposure limits were established in accordance with 10 CFR Part 20, Subpart L requirements and administrative procedures.

R8 Miscellaneous RP&C Issues (83750, 84750)

R8.1 (Open) VIO 50-348, 364/96-10-01: Failure to Construct and Maintain an "As-Built" Sample Line in Accordance with Configuration Control Procedures and Drawings.

This violation addressed differences between the installed "as-built" and the applicable configuration control procedures and drawings for the U1 Post Accident Sampling System Particulate detector (RE-67) sample line. Completion of corrective actions was verified during system walk-downs.

Additional corrective actions documented in a November 15, 1997, response to violation (VIO) 50-348/97-08-05, which also are applicable to this issue, were reviewed and discussed. Licensee commitments addressing Radiation Monitoring System (RMS) design control issues included additional system walk-downs, development of a RMS Functional System Description (FSD) document and subsequent validation by a Self-initiated Safety System Assessment (SSSA). From discussion with responsible licensee representatives and review of the FNP Radiation Monitor Plan and Radiation Monitor Walk-down Issues documents, the inspectors verified completion of the initial RMS equipment walk-downs and preliminary evaluations. Identified RMS design issues were discussed and determined to not affect RMS operability. Additional walk-downs of currently inaccessible RMS equipment located in both U1 and U2 containments were planned to be completed during future outages. Licensee representatives provided a preliminary schedule regarding development of the RMS FSD document and subsequent validation by a SSSA. Additional RMS design issues identified by the SSSA are to be corrected. Based on the completed actions and documented commitments for RMS equipment design issues, this part of the VIO is closed. However, the parts of this violation which were addressed in Section E1.3 of IR 50-348, 364/96-07 and Section E1.2 of IR 50-348, 364/96-09 remain open, pending future NRC review.

R8.2 (Closed) VIO 50-348/97-10-05: Inadequate Configuration Control of U1 RMS Particulate Sample Lines.

This violation identified concerns regarding differences between the installed sample lines constructed with flexible stainless steel tubing having corrugated internal surfaces and the applicable configuration control documents for the U1 backup Post-Accident Sampling System plant vent airborne particulate sampler (RE-68) and the U1 main stack particulate sampler (RE-29A). From direct observation of RMS equipment and review of licensee records, completion of corrective actions, i.e., installation of the correct sample line for the RE-68 monitor and use of a backup sampling system (RE-29B) for the U1 RE-29A monitor, was verified. As documented in Section R8.1, additional corrective actions and commitments detailed in the licensee's November 15, 1997, response to the violation were reviewed and discussed. Based on the completed actions and documented commitments, this VIO is closed.

R8.3 (Closed) Licensee Event Report (LER) 50-364/97-04-00: Operating Outside of Technical Specifications Due to Required Containment Grab Samples Not Being Taken.

a. Inspection Scope

The inspectors reviewed and discussed with responsible personnel, Licensee Event Report (LER) 50-364/97-04-00 which addressed the failure to conduct containment atmosphere grab samples as required by TS 3.4.7.1 when both the U2 containment atmosphere particulate (R-11) and gaseous (R-12) radiation monitoring systems were inoperable from September 10-12, 1997.

The LER and associated licensee's occurrence report were reviewed and discussed with cognizant licensee representatives. The affected system was walked down with responsible technicians and corrective procedural revisions were documented in FNP-2-RCP-27, Operation of Unit 2 RE0011/12 and RE0021/22, Rev. 12, issued November 4, 1997, were discussed.

b. Observations and Findings

The licensee occurrence report concluded that multiple equipment failures, inadequate procedural guidance, the failure of personnel to followup properly, and abnormally low radiation monitor readings contributed to the failure to identify the need for the TS grab sample surveillances. The inspectors noted that the failure to conduct grab samples when the U2 R-11 and R-12 radiation monitoring sampling systems were inoperable was identified as a violation of TS 3.7.4.1. The inspectors noted that the licensee's evaluation considered all potential causes contributing to the event and specified appropriate corrective actions. The implementation of proper corrective actions, including procedural revisions and associated training was verified. Consistent with Section VI of the Enforcement Policy, this issue was identified as



NCV 50-364/97-14-07: Failure to Conduct Compensatory Grab Sampling for Inoperable Unit 2 Containment Atmospheric Radiation Monitoring System in accordance with TS 3.4.7.1.

c. Conclusions

The inspectors identified NCV 50-364/97-14-07: Failure to Conduct Compensatory Grab Sampling for Inoperable Unit 2 Containment Atmospheric Radiation Monitoring System in accordance with TS 3.4.7.1.

P1 Conduct of EP Activities (71750)

P1.1 Emergency Plan Exercises

a. Scope

The inspectors observed the conduct of multiple emergency plan drills including two unannounced off-hours drills.

b. Observations and Findings

On October 30, 1997, resident inspectors participated in an unannounced off-hours drill of the licensee's emergency plan. The inspectors were onsite at 3:00 a.m., to observe the start of the drill and the setup of the Technical Support Center (TSC) and Emergency Operating Facility (EOF). The TSC and EOF were setup expeditiously and efficiently. The majority of the licensee staff was able to respond to the site promptly. However, two of the required positions for minimum manning of the EOF were not manned in time. This resulted in the EOF not being staffed and ready until 95 minutes after declaration of the Alert, 20 minutes more than the required time.

The licensee addressed the staffing deficiency promptly. On October 31, the licensee began briefing all on-call staff to discuss the delay in manning the EOF and to reiterate the expectations for staff response to site emergencies. The inspectors observed the first briefing conducted on October 31 and concluded that it clearly identified the licensee's expectations to plant on-call staff.

On November 18, the inspectors observed the licensee perform another unannounced off-hours drill to verify the effectiveness of the corrective actions. The drill started at 4:30 a.m., and all required positions were filled within the required times. Specifically, the EOF was manned and ready within 70 minutes of declaring the emergency.

On November 12, a resident inspector also observed the conduct of an announced emergency plan exercise that involved activation and manning of the alternate EOF. This facility was located at an Alabama Power Company (APC) service center in Headland, Alabama. The inspector confirmed that emergency response personnel were able to locate, setup, and fully

activate the alternate EOF, which would be used anytime the onsite EOF is unavailable.

c. Conclusions

Licensee corrective actions for failing to staff the EOF within the required time frame were prompt and thorough. The licensee successfully demonstrated the ability to activate the alternate EOF.

P8 **Miscellaneous Emergency Preparedness (EP) Issues**

During a Safety Audit and Engineering Review audit conducted during the period of November 25, 1996, to February 19, 1997, the licensee identified inconsistencies in the documentation associated with the inventory of emergency planning equipment. The inconsistencies were later determined by the licensee to be falsifications of the inventory checklists. On June 30, 1997, the NRC Office of Investigations (OI) completed an investigation of the apparent failure of an Emergency Preparedness Technician to perform required equipment inventories and the associated falsification of inventory checklists. OI concluded that, during the period April 1996 through January 1997, the technician failed to conduct at least three required inspections, and deliberately falsified at least four checklists. A copy of the synopsis to OI Report No. 2-97-005 is attached.

Based on licensee and OI reviews of this issue, a violation of 10 CFR 50.9, Completeness and Accuracy of Information, was identified in that the deliberate acts of the technician resulted in records that are required to be maintained by the licensee were not complete and accurate in all material respects. The licensee identified the inconsistencies, took prompt actions to investigate the issue, completed follow-up actions to ensure that all emergency preparedness equipment was in place and operable, and took appropriate remedial action. There was no actual safety consequence as a result of the falsifications, and the violation involved the isolated acts of a low-level individual. Therefore, this non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation (NCV), consistent with Section VII.B.1 of the NRC Enforcement Policy. This is identified as NCV 50-348, 364-97-14-08: Falsification of Emergency Planning Checklists Resulted in Inaccurate Records Being Maintained by the Licensee.

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

S1.1 Routine Observations of Plant Security Measures

During routine inspection activities, inspectors verified that portions of site security program plans were being properly implemented. This was evidenced by: proper display of picture badges and use of the biometrics system by plant personnel; appropriate key carding of vital area doors; adequate stationing/tours in the protected area (PA) by security



personnel; proper searching of packages/personnel at the primary access point and service water intake structure (SWIS); and adequate performance of security systems (i.e., video cameras). Security personnel activities observed during the inspection period were performed well. Site security systems were adequate to ensure physical protection of the plant. Inspector tours of the power block and SWIS PA boundaries verified structural integrity and condition of PA barriers.

**F8 Miscellaneous Fire Protection Issues (IP 71750)**

**F8.1 (Closed) VIO 50-348/96-410-01013: Failure to Assure that Electrical Cables Associated with Systems Necessary to Achieve and Maintain Hot Shutdown Conditions Were Enclosed in One-Hour Fire Barriers (92904)**

The licensee responded to this VIO in correspondence dated December 4, 1996, and initiated Corrective Action Report (CAR) 2225. An inspector reviewed the licensee's letter, completed CAR, and implementation of the corrective actions. The inspector observed portions of the installation of one of the fire barriers. This was documented in IR 50-348, 364/97-05. The inspector also verified that the remaining fire barriers were installed. The corrective actions identified in the CAR were consistent with those identified in LER 50-348/96-006. This VIO is closed.

**F8.2 (Closed) LER 50-348/96-006-00: Kaowool Fire Barriers Not Installed per Design Drawings (92700)**

This LER reported the issue cited in VIO 50-348/96-410-01013. This LER is closed based on the licensee's completion of corrective actions described in Section F8.1.

**F8.3 (Closed) VIO 50-348, 364/96-410-02014: Inadequate Periodic Inspection Program for Kaowool One-Hour Fire Barriers (92904)**

The licensee responded to this VIO in correspondence dated December 4, 1996, and initiated CAR 2226. The inspectors reviewed the licensee's letter, completed CAR, and implementation of the corrective actions. Licensee corrective actions included: 1) updating FNP-0-FSP-43, "Visual Inspection of Kaowool Wraps," to provide more detailed inspection guidance and identification of specific wraps to be inspected, 2) training inspection personnel for required Kaowool configurations, and 3) reviewing other aspects of the fire protection inspection program which were transferred to maintenance for similar problems. The inspectors verified that the corrective actions were complete. This VIO is closed.



### V. Management Meetings and Other Areas

#### X1 Review of Updated Final Safety Analysis Report Commitments

A recent discovery of a licensee operating its 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 inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

#### X2 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on December 4, 1997. The licensee acknowledged the findings presented.

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

#### PARTIAL LIST OF PERSONS CONTACTED

##### Licensee

C. Buck, Operations Superintendent - Unit 2  
 R. Joleman, Maintenance Manager  
 C. Collins, Operations Superintendent - Administration  
 P. Crone, Engineering Support Performance Supervisor  
 T. Esteve, Planning & Control Supervisor  
 R. Fucich, Engineering Support Manager  
 S. Gates, Administration Manager  
 D. Grissette, Operations Manager  
 P. Harlos, Plant Health Physicist  
 R. Hill, General Manager  
 C. Hillman, Security Chief  
 R. Johnson, Operations Superintendent - Procedures  
 T. Livingston, Chemistry Superintendent  
 R. Martin, Maintenance Team Leader  
 M. Mitchell, HP Superintendent  
 C. Nesbitt, Assistant General Manager, Plant Support  
 W. Oldfield, Nuclear Operations Training Supervisor  
 C. Reneau, Maintenance Team Leader - Team 5  
 M. Stinson, Assistant General Manager, Operations  
 G. Waymire, Technical Support Manager  
 R. Yance, Plant Modifications and Maintenance Support Manager

##### NRC

J. Zimmerman, NRR Project Manager

## INSPECTION PROCEDURES (IP) USED

IP 37551: Onsite Engineering  
 IP 50001: Steam Generator Replacement Inspection  
 IP 61726: Surveillance Observations  
 IP 62707: Maintenance Observations  
 IP 71707: Plant Operations  
 IP 71714: Cold Weather Preparations  
 IP 71750: Plant Support Activities  
 IP 83750: Occupational Radiation Exposure  
 IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring  
 IP 86750: Solid Radioactive Waste Management and Transportation of Radioactive Materials  
 IP 90712: In-Office Review of Written Reports of Non-Routine Events at Power Reactor Facilities  
 IP 92700: Onsite Followup of Written Reports of Non-Routine Events at Power Reactor Facilities  
 IP 92901: Followup - Operations  
 IP 92902: Followup - Maintenance  
 IP 92903: Followup - Engineering  
 IP 92904: Followup - Plant Support  
 TI 2515/133: Implementation of Revised 49 CFR Parts 100-179 and 10CFR Part 71.  
 TI 2515/136: Operation of Dual Function Containment Isolation Valves

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
NCV	50-348, 364/97-14-01	Open	Inadequate Implementation of Cold Weather Protection Procedures (Section 02.7)
NCV	50-348, 364/97-14-02	Open	Failure To Sign Off Steps For Continuous Use Procedures as They Are Performed (Section M1.1)
VIO	50-348, 364/97-14-03	Open	Inadequate Corrective Actions for Maintaining Main Steam Valve Room Cork Seal Flooding Barrier (Section M8.1)
NCV	50-348/97-14-04	Open	Entry Into TS 3.0.3 Due to the Failure to Follow the Work Control Process Procedure (Section M8.4)

VIO	50-348, 364/97-14-05	Open	Failure to Provide Tornado Missile Protection for TDAFW Pump Vent Stack (Section E8.1)
NCV	50-348, 364/97-14-06	Open	Failure to Follow Wholebody Counting (WBC) Analysis Procedures for Evaluation of Workers' Potential Radionuclide Intakes (Paragraph R1.3)
NCV	50-364/97-14-07	Open	Failure to Conduct Compensatory Grab Sampling for Inoperable Unit 2 Containment Atmospheric Radiation Monitoring System in accordance with TS 3.4.7.1 (Paragraph R8.3)
NCV	50-348, 364-97-14-08	Open	Falsification of Emergency Planning Checklists Resulted in Inaccurate Records Being Maintained by the Licensee (Section P8)

Closed

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
NCV	50-348, 364/97-14-01	Closed	Inadequate Implementation of Cold Weather Protection Procedures (Section O2.7)
NCV	50-348, 364/97-14-02	Closed	Failure To Sign Off Steps For Continuous Use Procedures as They Are Performed (Section M1.1)
NCV	50-348/97-14-04	Closed	Entry Into TS 3.0.3 Due to the Failure to Follow the Work Control Process Procedure (Section M8.4)
LER	50-348, 364/96-01	Closed	TS Action Statement Requirement Not Met For SPS Testing (Section M8.3)
LER	50-348/97-11	Closed	Entry Into TS 3.0.3 Due to the Failure to Follow the Work Control Process Procedure (Section M8.4)
IFI	50-348, 364/96-02-03	Closed	Pre-Action Sprinkler System Failures (Section M8.2)
LER	50-348, 364/97-07-00	Closed	Outside Of Design Basis Due To Degraded Cork Material (Section M8.1)



URI	50-348, 364/97-201-08	Closed	Tornado Protection of TDAFW Pump Vent Stack (Section E8.1)
LER	50-348/96-006-00	Closed	Kaowool Fire Barriers Not Installed per Design Drawings (Section F8.2)
VIO	50-348/96-410-01013	Closed	Failure to Assure that Electrical Cables Associated with Systems Necessary to Achieve and Maintain Hot Shutdown Conditions Were Enclosed in One-Hour Fire Barriers (Section F8.1)
VIO	50-348, 364/96-410-02014	Closed	Inadequate Periodic Inspection Program for Kaowool One-Hour Fire Barriers (Section F8.3)
NCV	50-348, 364/97-14-06	Closed	Failure to Follow Wholebody Counting (WBC) Analysis Procedures for Evaluation of Workers' Potential Radionuclide Intakes (Paragraph R1.3)
NCV	50-364/97-14-07	Closed	Failure to Conduct Compensatory Grab Sampling for Inoperable Unit 2 Containment Atmospheric Radiation Monitoring System in accordance with TS 3.4.7.1 (Paragraph R8.3)
NCV	50-348, 364-97-14-08	Closed	Falsification of Emergency Planning Checklists Resulted in Inaccurate Records Being Maintained by the Licensee (Section P8)
VIO	50-348/97-10-05	Closed	Inadequate Configuration Control of UI RMS Particulate Sample Lines (Section R8.2)
LER	50-364/97-04-00	Closed	Operating Outside of Technical Specifications Due to Required Containment Grab Samples Not Being Taken (Section R8.3)

Discussed

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
VIO	50-348, 364/96-10-01	Open	Failure to Construct and Maintain an "As-Built" Sample Line in Accordance with Configuration Control Procedures and Drawings (Section R8.1)

## SYNOPSIS

The Office of Investigations, U.S. Nuclear Regulatory Commission, Region II, initiated this investigation on March 17, 1997, in order to determine if a former Emergency Planning (EP) technician at Alabama Power Company's Joseph m. Farley Nuclear Plant had failed to conduct required inspections of emergency equipment and supplies, and deliberately falsified EP equipment inspection checklists.

Based upon the evidence developed in this investigation, it is concluded that, during the period April 1996 through January 1997, the former EP technician failed to conduct at least three required inspections, and deliberately falsified at least four checklists.