UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

May 1, 2000

EA-00-100

Southern Nuclear Operating Company, Inc.
ATTN: Mr. D. N. Morey
Vice President
P. O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: NRC INTEGRATED INSPECTION REPORT NOS. 50-348/00-02 and 50-364/00-02

Dear Mr. Morey:

On April 1, 2000, the NRC completed an inspection at your Farley Nuclear Plant. The enclosed integrated report presents the results of that inspection. During the five-week period covered by this inspection, your conduct of activities at the Farley Plant facilities was generally characterized by safety-conscious operations, effective engineering preparation for the steam generator replacement outage, and effective plant support activities.

Based on the results of this inspection, the NRC has determined that three violations of NRC requirements occurred which are being treated as Non-Cited Violations (NCVs), consistent with Section VII.B.1.a of the Enforcement Policy. These NCVs are described in the enclosed inspection report. If you contest the violation or severity level of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, the Resident Inspector at your facility, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In addition, an apparent violation was identified and is being considered for escalated enforcement action in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600. As discussed in Section O2.2 of the enclosed inspection report, on February 7, 2000, Farley Unit 2 was operated in a condition that could have prevented the service water system from performing its intended design function which resulted in an apparent violation of Technical Specification 3.0.5. In addition, based on our review of this issue, we understand that your staff had previous opportunities to identify and preclude the discrepancy between operating practices and the applicability of the service water lubrication and cooling booster pumps as attendant equipment. These opportunities occurred as a result of the NRC's Service Water Operational Performance Inspection (SWOPI) in 1993, and again in 1998, when a senior reactor operator informally brought this issue to the attention of engineering personnel. The NRC has determined that the failure to promptly identify and correct this condition adverse to quality as required by 10 CFR Appendix B, Criterion XVI, Corrective Action, represents a contributing cause of the apparent violation of TS 3.0.5. The details of this issue were documented in Licensee Event Report 50-364/2000-01.

The circumstances surrounding this apparent violation, the significance of the issue, and the need for lasting and effective corrective action have been discussed with members of your staff and at an inspection exit meeting on April 13, 2000. As a result, it may not be necessary to conduct a predecisional enforcement conference in order to enable the NRC to make an enforcement decision.

In addition, since your facility has not been the subject of escalated enforcement actions within the last 2 years, and based on our understanding of your corrective action, a civil penalty may not be warranted in accordance with Section VI.B.2 of the Enforcement Policy. The final decision will be based on your confirming on the license docket that the corrective actions previously described to the staff have been or are being taken.

Before the NRC makes its enforcement decision, we are providing you an opportunity to either (1) respond to the apparent violation addressed in this inspection report within 30 days of the date of this letter or (2) request a predecisional enforcement conference. If a conference is held, it will be open for public observation. The NRC will also issue a press release to announce the conference. Please contact Stephen J. Cahill at (404) 562-4250 within 7 days of the date of this letter to notify the NRC of your intended response.

If you respond, your response should be clearly marked as a "Response to An Apparent Violation in Inspection Report Nos. 50-348/00-02 and 50-364/00-02" and should include: (1) the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response should be submitted under oath or affirmation and may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a predecisional enforcement conference. In addition, please be advised that the number and characterization of apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be placed in the NRC Public Document Room.

Sincerely,

/RA/
Victor M. McCree
Deputy Director
Division of Reactor Projects

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

Enclosure: (See page 3)
Enclosure: NRC Inspection Report Nos. 50-348/00-02
and 50-364/00-02

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Enclosure: NRC Inspection Report Nos. 50-348/00-02
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OFFICE	RII:DRP	RII:EICS	OE	RII:DRS			
SIGNATURE	SJC	CFE	via E-Mail	SJC-per E-Mail			
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E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-348 and 50-364
License Nos.:	NPF-2 and NPF-8
Report Nos.:	50-348/00-02 and 50-364/00-02
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Farley Nuclear Plant, Units 1 and 2
Location:	7388 N. State Highway 95 Columbia, AL 36319
Dates:	February 27 to April 1, 2000
Inspectors:	T. P. Johnson, Senior Resident Inspector R. K. Caldwell, Resident Inspector J. H. Bartley, Resident Inspector R. C. Chou, Reactor Inspector (Sections E1.1 to 1.3, section E3.2) J. J. Blake, Senior Project Manager (Sections E1.4, E3.1, E5.1, E7.1) D. B. Forbes, Radiation Specialist (Section R1.2) G. W. Salyers, Emergency Preparadness Specialist (Section P1.1) L. S. Hayes, Physical Security Specialist (Section S8.1)
Approved by:	Stephen J. Cahill, Chief Reactor Projects, Branch 2 Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

Farley Nuclear Power Plant Units 1 and 2
Nuclear Regulatory Commission Inspection Report 50-348,364/00-02

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a five-week period of resident inspection, a specialist inspection of emergency preparedness, and specialist inspections of radiation protection, security, welding, and load lifts related to the steam generator replacement project.

Operations

- Operator performance during routine and shutdown plant operation was effective. The shutdown for the Unit 1 outage was well controlled with comprehensive oversight. However, an operator error during the steam generator feedwater pump shutdown resulted in an auxiliary feedwater actuation (Section O1.1).

- Operations personnel were cognizant of plant configurations that altered outage and shutdown risk calculations. Safety assessment monitoring parameters were routinely reviewed and disseminated to plant personnel (Section O1.1).

- An apparent violation of Technical Specification 3.0.5 was identified. The Unit 2 'A' train service water (SW) system emergency power source (1C diesel generator) was removed from service for maintenance concurrent with the redundant 'B' train SW lube and cooling booster pump being out of service. The 'B' train SW lube and cooling booster pump is required attendant equipment for SW so this constituted a potential loss of the SW safety function. Previous opportunities to identify and correct the discrepancy between operating practices and the applicability of the service water lubrication and cooling booster pumps as attendant equipment were not effective (Section O2.2).

- The Human Performance Review Board process was well received by all those involved and was focused on prevention of future errors (Section O7.1).

Maintenance

- Maintenance activities were well planned and conducted, including steam generator replacement project activities, emergency diesel generator and sequencer testing, and outage maintenance and testing (Section M1.1).

Engineering

- Preparation of heavy load equipment and engineering preparation and documentation for the steam generator replacement were adequate. Lifting and rigging of the "C" steam generator and welding activities were appropriately controlled (Sections E1.1 through 1.4).

- Steam generator replacement project procedures were adequate and personnel were properly qualified and trained in plans for implementing quality assurance requirements. Quality assurance implementing plans were adequate (Sections E3.1, E3.2, E5.1, E7.1).

- A non-cited violation was identified for three Unit 1 fuel assemblies which were not stored in the spent fuel pool in accordance with the Technical Specification requirements (Section E8.3).

Plant Support

- Radiation protection survey equipment was currently calibrated and source checked. Personnel were performing required surveys. Procedures to control radioactive contamination, and to maintain internal and external exposures as low as reasonably achievable (ALARA) had been developed. Licensee personnel experienced in ALARA planning and radiation protection activities were actively involved in all phases of the steam generator replacement project. Radiation Work Permits adequately addressed ALARA considerations and exposure and contamination controls for the expected radiological hazards (Section R1.2).

- Observed and planned security compensatory measures, removal of protected and vital area barriers, steam generator search plans, and access control to containment during the steam generator replacement project were appropriate and met plant Physical Security Plan requirements (Section S8.1.)

- The licensee appropriately maintained their emergency preparedness program, conducted drills, and maintained facilities and equipment. A non-cited violation was identified for one omission in the required communication tests (Section P1.1).

- A non-cited violation was identified for poor control of transient combustibles used by operations, health physics, and facilities personnel. The control of transient combustibles by the work order process did not prevent exceeding allowable fire loading in some areas (Section F1.1).

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at 62% Rated Thermal Power (RTP) due to an extraction steam leak in the main condenser, until the unit was shut down for a refueling and steam generator replacement outage on March 4. It remained shut down for the remainder of the period. Unit 2 operated at or near 100% RTP for the period.

I. Operations

O1 Conduct of Operations

O1.1 Routine Observations of Control Room Operations and Unit 1 Steam Generator Replacement (SGR) Outage Observations (50001 and 71707)

The inspectors observed licensed control room operator and non-licensed operator performance during the period. Operators were attentive to annunciator alarms and response to changing plant conditions was prompt. The Shift Supervisor's command and control during the Unit 1 shut down was continuous and comprehensive.

The inspectors also observed portions of the operational activities related to the SGR outage. These included the unit shut down, cool down, solid plant operation, vessel drain down, vessel disassembly, and core offload. Plant condition changes were normally implemented appropriately. However, inspectors observed that operators omitted one shutdown procedure step which resulted in an automatic auxiliary feedwater (AFW) actuation. Section E8.1 of this report dispositions the AFW actuation. Operations personnel were cognizant of plant configurations that altered outage and shutdown risk calculations. Safety assessment monitoring parameters were routinely reviewed and disseminated to plant personnel.

O2 Operational Status of Facilities and Equipment

O2.1 General Tours and Inspections of Safety Systems (71707)

General tours of safety-related areas were performed by the inspectors to observe the physical condition of plant equipment and structures, and to verify that safety and risk significant systems were properly maintained and aligned. Plant systems inspected included electrical power distribution and the emergency diesel generator (EDG) systems, and the spent fuel pool cooling systems. The inspectors also verified that selected tagouts were implemented in accordance with procedural requirements.

O2.2 Technical Specification (TS) 3.0.5 Entered Due to Unit 2 Service Water Lubrication and Cooling Pumps Inoperable

(Closed) LER 50-364/00-001 Revisions 0 and 1, TS 3.0.5 Entered Due to Service Water Lubrication and Cooling Pumps Inoperable

a. Inspection Scope (71707, 92700)

The inspectors reviewed the licensee's actions related to the simultaneous inoperability of the shared 1C emergency diesel generator (EDG) due to planned maintenance and the Unit 2 B train service water (SW) system due to failure of its lubrication and cooling (L&C) booster pump.

b. Observations and Findings

On February 6, the Unit 2 B train SW L&C booster pump was removed from service and declared inoperable. No action was taken in the SW Technical Specifications (TS) because SW was considered operable by the operators without the L&C booster pump. On February 7, the 1C EDG (shared A train EDG between Units 1 & 2) was taken out of service for planned maintenance. Eleven hours after the 1C EDG was taken out of service, an on-shift senior reactor operator (SRO) recognized that the SW L&C booster pumps were needed to consider B train SW operable and fulfill the SW safety function as described in the Functional System Description (FSD) design basis document. The SRO determined that TS 3.0.5 was applicable because, with the B train of SW inoperable, the A train of SW could no longer be considered operable without its emergency power supply (the 1C EDG). The licensee immediately initiated action and restored the 1C EDG to an operable condition within 1.5 hours.

Operators did not recognize or consider that the L&C booster pump was attendant equipment for the SW pumps. Neither the TS nor the Final Safety Analysis Report (FSAR) identified the L&C booster pumps as attendant equipment. The licensee initiated occurrence report (OR) 2-2000-0077 and conducted a root cause assessment. They concluded that the Unit 2 SW L&C booster pumps were attendant equipment for SW pump operability and that none of the SW design basis documentation clearly identified this requirement. Consequently, they concluded that the requirements of TS 3.0.5 had not been met on February 7 and issued Licensee Event Report (LER) 50-364/2000-01 on March 3, 2000, and Revision 1 of the LER on April 5, 2000. Revision 1 conclusively stated that the Unit 2 SW L&C booster pumps were necessary attendant equipment for SW to perform its intended design function. Unit 1 was unaffected as its SW pumps do not have or require a L&C booster pump.

An NRC Service Water Operational Performance Inspection (SWOPI) in 1993 had previously questioned required actions to be taken when the L&C booster pumps were removed from service. The licensee obtained a vendor memo which advised that the SW pumps could be expected to operate for 60 days without the L&C booster pumps. However, this information was not based on complete vendor engineering data. The licensee also did not perform an engineering evaluation to incorporate this information into the SW FSD. The FSD continued to state that SW pumps would only last 30 minutes without the L&C booster pumps. The difference between the FSD and the vendor information used to address the SWOPI issue was again identified in 1998 by a senior reactor operator. Actions were taken to identify the discrepancy to licensee

engineering personnel, but it was not entered into the corrective action system and no short term corrective action was taken. The inspectors determined that these were previous opportunities to identify and preclude the discrepancy between operating practices and the applicability of the service water lubrication and cooling booster pumps as attendant equipment. The NRC has determined that the failure to promptly identify and correct this condition adverse to quality as required by 10 CFR Appendix B, Criterion XVI, Corrective Action, represents a primary contributing cause of the violation of TS 3.0.5.

For the plant configuration that existed on February 7, had a dual unit Loss of Offsite Power (LOSP) occurred, Unit 2 would not have had emergency electrical power or SW capability (due to the A train 1C EDG inoperability and a loss of SW to the B train EDG). However, in the LER, the licensee stated that operators could take manual actions to mitigate this event by restoring SW or aligning alternate power sources. The inspectors evaluated possible manual actions by observing simulator exercises, reviewing procedures, and discussions with licensee personnel. The inspectors determined that, although manual operator actions to mitigate this event were possible, action to restore SW were not specifically directed by any LOSP emergency operating procedure. Furthermore, operators would have needed to recognize that the L&C booster pumps were attendant equipment and that action would have to be taken. A loss of both trains of EDGs and SW systems for this specific scenario is significant. Based on discussions with the licensee, review of the licensee's risk assessment, and the duration of the event, this issue is of moderate risk significance.

Technical Specification 3.0.5 requires, in part, that when a system, subsystem, train, component, or device is determined to be inoperable solely because its emergency power source is inoperable, "it may be considered OPERABLE for the purpose of satisfying its applicable Limiting Condition for Operation provided that: (1) its corresponding normal or emergency power source is OPERABLE; and, (2) all of its redundant systems, subsystems, trains, components, or devices are OPERABLE or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within 2 hours, ACTION shall be taken to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply." Technical Specifications normally define a system or train as OPERABLE when all necessary attendant auxiliary equipment required for that system or train to perform its function is also capable of performing their related support functions.

Commencing at 3:29 a.m. on February 7, 2000, the Unit 2 B train SW was inoperable (when the attendant B train SW L&C booster pump was removed from service) and the Unit 2 A train SW emergency power source, the 1C EDG, was inoperable. With the B train of SW inoperable, the A train of SW was not operable without its emergency power supply (the 1C EDG) per TS 3.0.5. Therefore, both trains of Unit 2 SW were inoperable. This was beyond the scope of the TS 3.7.4 Service Water Limiting Condition for Operation which only addressed a single inoperable train, so the requirements of TS 3.0.5 were applicable. The requirements of Technical Specification 3.0.5 were not met for 12.5 hours and the licensee failed to take action within 2 hours to place the unit in a MODE in which the applicable Limiting Condition for Operation did not apply. This is an apparent violation and is identified as Escalated Enforcement Item (EEI) 50-364/00-02-01, Technical Specification 3.0.5 Entered Due to Service Water Lubrication and Cooling Pumps Inoperable.

The licensee immediately took action upon discovery of the problem to restore compliance. The 1C EDG was declared operable at 4:05 p.m. on February 7 and TS 3.0.5 was exited. The licensee also implemented corrective actions to revise design basis documents and operating procedures to identify the L&C booster pumps as attendant equipment for SW. The inspectors verified these corrective actions.

c. Conclusion

Unit 2 was operated in a condition that could have prevented the service water system from performing its intended function. An apparent violation was identified for failure to meet the requirements of TS 3.0.5. The Unit 2 'A' train service water (SW) system emergency power source (1C diesel generator) was removed from service for maintenance concurrent with the redundant 'B' train SW lube and cooling booster pump being out of service. The 'B' train SW lube and cooling booster pump is required attendant equipment for SW so this constituted a potential loss of the SW safety function. Previous opportunities to identify and correct the discrepancy between operating practices and the applicability of the service water lubrication and cooling booster pumps as attendant equipment were not effective.

O7 Quality Assurance in Operations

O7.1 Human Performance Review Board (71707)

The licensee instituted a new Human Performance Review Board process to focus licensee management attention on personnel performance issues. During these meetings, the specifics of the errors, root cause, and proposed corrective actions were discussed. The inspectors attended several meetings during the period. They were well attended by senior site management, employees, and supervision. Issues discussed included overtime implementation problems, operator errors, and health physics related errors during the Unit 1 outage. The inspectors concluded that this proactive initiative was well received by all those involved and focused on prevention of future errors.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments (50001, 61726, and 62707)

The inspectors witnessed or reviewed portions of selected maintenance and surveillance test activities. This included steam generator replacement outage activities, sequencer testing, and outage related maintenance. The inspectors determined that the activities were conducted in a satisfactory manner and that the work was properly performed in accordance with approved maintenance work orders. Personnel conducting the activities were, in general, knowledgeable of their assigned tasks. Related tagouts were also reviewed and determined to be adequate.

III. Engineering

E1 Conduct of Engineering

E1.1 Review of Heavy Load Equipment Preparation and Installation (50001)

The inspectors reviewed documentation, test data, personnel training records, and installation for the heavy load lifting and rigging equipment and devices to be used for the steam generator (SG) replacement activities in order to verify that they met the licensee's commitments, regulatory requirements, and industrial standards. The inspectors also discussed the lifting processes and precautions with both licensee and contract engineers and observed the equipment to be used for moving the heavy loads. The inspectors verified the markings on the Temporary Lifting Device and polar crane girders. These markings were required by the Work Plan & Inspection Records (WP&IRs) to provide the operating limits for the TLD operators and person in charge of the lifting. The inspectors reviewed the training and qualification records of the crane and equipment operators. The inspectors also reviewed equipment or crane maintenance and inspection records. The inspectors concluded that the heavy load equipment preparation and installation were adequate for the steam generator replacement activity.

E1.2 Engineering Preparation and Implementation for the SGRP

a. Inspection Scope (50001)

The inspectors reviewed engineering preparation, selected design change packages (DCPs), calculations, analyses, drawings, and WP&IRs for the pipe cutting, interference and snubber removal, and temporary restraint installation. The inspectors observed the pipe and biowall cutting, interference removal, and inspected the installation of temporary restraints.

b. Observations and Findings

The inspectors checked design methods, computations, and accuracies for several DCPs performed for pipe cutting, interference removal, and temporary restraints to prevent pipe movement. No problems were found.

The licensee generated WP&IRs which were similar to plant procedures for the work processes or for implementing various tasks. The WP&IRs were to be used for the SGRP only. The inspectors reviewed several "C" SG WP&IRs for interference removal on the biowall such as instrument air, structural steel, electrical components and shell temperature monitoring systems. The inspectors reviewed record copies of the WP&IRs to verify that the records matched the work progress and the required personnel signed off the appropriate steps after the work was completed.

The inspectors observed the steam line cutting, whip restraint, platform, and interference removal, biowall cutting, and runway installation. The inspectors also observed the temporary restraint installation for steam lines, reactor coolant systems, and steam generator columns. No problems were identified.

c. Conclusions

The engineering preparation, performance, and implementation for the steam generator replacement were adequate.

E1.3 Observation of "C" Steam Generator Lift (50001)

The inspectors observed the lifting and rigging of the "C" SG from the steam generator cubicle to the containment equipment hatch barrel. The inspectors observed the vicinity of the "C" SG before the lifting operation began to make sure that the licensee removed all the interferences, biowall, and restraints. The inspectors observed the interference and checked the lifting chain position during the lifting and rigging of the SG. The chain remained within the 2% limit from the vertical line assuring that the lifting and downending operation did not exceed design limits. The inspectors concluded that the lifting and rigging out of the "C" steam generator was adequately controlled.

E1.4 Unit 1 Steam Generator Replacement Welding Activities (50001)

The inspectors observed set-up and operation of welding and machining equipment. The welding equipment and processes were observed during mock-up work and welder qualifications, while the machining operations were observed during welding preparation on the steam generator nozzles. Nondestructive examination of newly-machined weld prep areas were observed. Proper use of decontamination and foreign object search and retrieval equipment were also observed during mock-up drills and demonstrations. Based on these observations, the inspectors concluded that the licensee properly performed these welding activities.

E3 Engineering Procedures and Documentation

E3.1 Unit 1 Steam Generator Replacement Procedures (50001)

The inspectors reviewed special procedures for cutting, machining, welding, and performing nondestructive examination. The welding procedure essential variables were compared to data provided in the ASME-required supporting Procedure Qualification Reports. Cutting and machining procedures were reviewed during observation of the weld-prep work on the replacement steam generators. The inspectors concluded that the procedures were adequate.

E3.2 Document Review for the SGRP (50001)

The inspectors reviewed deficiency reports generated by the manufacturer, licensee, and Westinghouse and the resolutions or evaluations provided by their engineers during the SG manufacturing processes. The inspectors reviewed material types, material contents, heating numbers, and testing requirements and compared them to the Specification number S-3001, "Technical Specification for Replacement Steam Generators", Revision 5A.

The inspectors discussed the Quality Assurance (QA) program with the on-site QA group for the SGRP and reviewed their audit reports. The audit reports included in-process observations and evaluations, personnel qualifications and training, organization function reviews, procedural reviews (WP&IR), and open item reports which were generated for deficiencies found. The inspectors also reviewed open item resolutions.

The inspectors concluded that the documents and records reviewed such as inspection, audit, and material reports were adequate and accurate.

E5 Engineering Staff Training and Qualification

E5.1 Unit 1 Steam Generator Replacement Training and Qualification (50001)

The inspectors reviewed and observed the use of mock-ups for training of personnel for decontamination work, foreign object search and retrieval work and welding activities. Welder qualification activities were observed to verify the integrity of the testing activities. Supporting documentation for qualified welders and nondestructive examination inspectors were also reviewed. Based on these reviews, the inspectors concluded that the personnel were properly qualified and trained.

E7 Quality Assurance in Engineering Activities

E7.1 Unit 1 Steam Generator Replacement Quality Assurance (50001)

The inspectors reviewed the licensee's plans for implementing quality assurance requirements, including the use of "third-party" inspection agencies, during the steam generator replacement activities. The inspectors concluded that the implementing plans were adequate.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) LER 50-348/00-02: Unplanned AFW Actuation Upon Shutdown of Both Steam Generator Feed Pumps (92700). The inspectors determined that the licensee's corrective actions were thorough and addressed the deficiencies which led to the personnel error. This failure to follow procedure constituted a violation of minor significance and is not subject to formal enforcement action.

E8.2 (Closed) LER 50-348/00-03, Penetration Room Filtration Automatic Start During Fuel Sipping (92700). The inspectors reviewed the LER and corrective actions and determined they were adequate. No violations of NRC requirements were identified.

E8.3 (Closed) LER 50-348/00-004, Three Spent Fuel Assemblies in Spent Fuel Pool (SFP) Locations Not Allowed by TS 3.7.15 (92700)

On March 23, the licensee made a 10 CFR 50.72 report based on determination that three fuel assemblies in the Unit 1 SFP were in storage locations other than those permitted by Technical Specifications (TS) 3.7.15 and 4.3.1.1.f. The first erroneous placement occurred on March 13, and the core offload was completed March 14. The licensee's assessment indicated that the design reactivity limit of Keff less than 0.95 for the SFP was still met. The licensee immediately initiated action to move the fuel to an acceptable storage location as required by the Action Statement of Tech Spec 3.7.15. The fuel assemblies were repositioned to acceptable storage locations within approximately two hours of discovery.

The cause of the event was personnel error, in that the personnel responsible for developing and verifying the SFP configuration failed to ensure that three fuel assemblies met the TS configuration requirements. Contributing causes were determined to be: lack of detail in the procedure; low experience level of personnel performing the tasks; and, insufficient review in the verification process. Although, the safety significance of this specific event was minimal since the design reactivity margin was maintained, the licensee's process barriers were not effective to ensure that spent fuel assemblies were properly loaded in the SFP.

TS 3.7.15 requires that the combination of initial enrichment and burn up of each spent fuel assembly stored in the spent fuel storage pool shall be within the Acceptable Burn-up Domain of Figure 3.7.15-1 or in accordance with TS 4.3.1.1. TS 4.3.1.1.f requires, in part, that new or partially spent fuel assemblies with a combination of discharge burn up and initial enrichment in the "unacceptable range" of Figure 3.7.15-1 will be stored in compliance with the NRC approved Figures 4.3-1 through 4.3-5. Surveillance Requirement (SR) 3.7.15.1 of TS 3.7.15 requires that, within 7 days following the relocation or addition of assemblies to the SFP, an administrative verification be performed to assure that the initial enrichment and burn-up of each fuel assembly complies with the above requirements. Contrary to SR 3.7.15.1, three fuel assemblies in the "unacceptable range" of Figure 3.7.15-1 were not stored in compliance with Figures 4.3-1 through 4.3-5 from March 13 to March 23, 2000 and were not detected during the administrative verification. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's's corrective action system as occurrence report 2-2000-268 and is identified as NCV 50-348/00-02-02, Three Fuel Assemblies in SFP Storage Locations Not Allowed by TS 3.7.15. The inspector interviewed involved personnel and reviewed the LER, the identified corrective actions, and the root cause report. The inspector concluded that the licensee appropriately identified and followed

up on this issue. Their root cause and corrective actions taken were reviewed and determined to be acceptable. No other issues were identified by the inspectors.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Radiologically Controlled Area (RCA) Tour and Radiation Exposure (71750)

Overall cleanliness of the RCA remained good. Plant personnel observed working in the RCA generally demonstrated appropriate knowledge and application of radiological control practices. Health physics technicians generally provided positive control and support of work activities in the RCA.

R1.2 Steam Generator Replacement Preplanning Inspection (50001)

The inspectors observed and reviewed licensee activities for Unit 1 Steam Generator Replacement Project (SGRP) to determine the adequacy of the licensee radiological controls. The inspectors toured the Unit 1 Reactor Building, Auxiliary Building, and Radioactive Waste Building, observed work in progress, and interviewed workers. At the time of the inspection, areas observed were appropriately posted and radioactive material was appropriately labeled. The inspectors determined radiation protection survey equipment observed in use was currently calibrated and source checked, and personnel were performing surveys as required by station procedures. The licensee had developed procedures and work practices to control radioactive contamination, and to maintain internal and external exposures as low as reasonably achievable (ALARA). Licensee personnel experienced in ALARA planning and radiation protection activities were actively involved in all phases of the steam generator replacement project. The licensee had established low dose waiting areas and emphasized their use. When the inspectors observed some workers not using the low dose waiting areas, Health physics personnel directed the workers to use the low dose areas. The inspectors reviewed Radiation Work Permit (RWP) requirements. The RWPs reviewed adequately addressed ALARA considerations, external and internal exposure controls, and contamination controls for the expected radiological hazards.

P1 Conduct of Emergency Preparedness (EP) Activities

P1.1 Review of EP Program

a. Inspection Scope (82701)

The inspector reviewed EP program activities to determine if the licensee's emergency response capability was maintained in a state of operational readiness, and to determine if program changes since the last such inspection met commitments, NRC requirements, and affected the licensee's overall state of preparedness.

b. Observations and Findings

The inspector reviewed revisions 31, 32, and 33 to the Nuclear Emergency Plan and determined that the changes did not decrease the effectiveness. Revisions were submitted to the NRC in accordance with regulatory requirements. The inspector verified that the Emergency Plan procedures in licensee EP facilities were the latest revisions.

The inspector toured the licensee EP facilities and operationally tested communications equipment, data retrieval systems, dose assessment computers. All equipment operated properly. All communications and emergency response equipment surveillances were performed at the required frequencies. The facilities were not dedicated solely to EP use, but were maintained so that they could be used as emergency preparedness facilities. The inspector reviewed the licensee's surveillance records for 1999 and determined that emergency cabinets were inventoried annually and after each use, sealed. The inspector also verified that emergency supply cabinets were sealed. Since the last inspection, the licensee had upgraded their dose assessment systems and installed a new programable radio communication system.

The licensee's Alert and Notification System (ANS) consisted of sirens and Tone Alert Radios. Siren testing consisted of a weekly "silent" test; a full sound test twice annually, and a quarterly growl test. The Tone Alert Radios were tested weekly. The inspector reviewed the siren test results and noted that the sirens exceeded the 90% Federal Emergency Management Agency (FEMA) minimum availability requirement.

The licensee maintained initial training and retraining of ERO members in accordance with the Emergency Plan. The inspector reviewed lesson plans and concluded that they were commensurate with the position. The inspector reviewed the initial and retraining records of nine randomly selected ERO members and did not find any discrepancies.

Procedure EPIP-15, Emergency Drills Section 5.2.6, Revision 22, required the licensee to perform and document a quarterly test to contact on-call ERO personnel. The test was to consist of phoning the "Community Area Network" (CAN), and having the CAN activate the ERO pagers. However, the licensee had not performed or documented the test in accordance with EPIP-15. The licensee acknowledged the omission of the quarterly test was an oversight, but stated that the same actions were performed when the ERO was activated for quarterly drills. The inspector noted that quarterly drills were not required by the EPIPs and that one quarterly drill was not conducted in 1999. The inspector reviewed the licensee's quarterly drill documentation and also noted that the licensee had experienced numerous errors with the CAN system. Consequently, the

failure to perform the tests as designed did not effectively exercise the CAN system and could impact licensee emergency response.

Technical Specification 5.4.1 states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Rev. 2, Appendix A. Subparagraph 6 of RG 1.33, Appendix A, recommends procedures for combating emergency and other significant events. EPIP-15, Emergency Drills Section 5.2.6, required the licensee to perform and document a quarterly test to contact on-call ERO personnel.

Contrary to the above, as of March 17, 2000, the licensee had not performed or documented quarterly test to contact on-call ERO personnel in accordance with the requirements in EPIP-15. Consistent with Section VII.B.1.a of the NRC Enforcement Policy, this violation of Farley's Emergency Plan was identified as NCV 50-348,364/00-02-03, Failure to Perform or Document Quarterly Test to Contact On-call ERO Personnel. This violation is in the licensee's corrective action program as OR 1-2000-235.

The licensee completed the number and types of drills committed to in the Nuclear Plant Emergency Plan and EPIP-15 with the exception of the quarterly CAN test. A Drill/Exercise Schedule matrix tracked each of the major components of the emergency plan as they were tested. The inspector reviewed the licensee's drill packages and critiques for drills conducted in 1999. During drills and exercises, scenario changes in plant conditions and data were given to the drill participants on sheets of paper. Issues identified in critiques were tracked in ORs until completion. ORs reviewed were closed in a timely manner based on the resources required.

The inspector reviewed the "Emergency Preparedness Functional Area Audit 99EP/16-1," conducted from August 16, 1999 through September 14, 1999 and discussed the audit findings with the licensee. The inspector noted the audit addressed the areas required in 10 CFR 50.54(t) and met the audit requirements.

c. Conclusions

The licensee maintained their emergency preparedness program, conducted their drills, and maintained their facilities and equipment. Inconsistencies were noted in the procedures for implementing the ERO training program. A Non-Cited Violation was issued for failing to perform or document quarterly tests to contact on-call ERO personnel.

S8 Miscellaneous Security and Safeguards Issues

S8.1 Steam Generator Replacement Inspections

a. Inspection Scope (50001)

The inspector evaluated the licensee's implementation of compensatory measures during the steam generator replacement project. Additionally, the inspector reviewed protected and vital area access controls, affected protected area barriers, and search plans for the new steam generators to determine compliance with the Physical Security Plan (PSP).

b. Observations and Findings

The PSP, Revision 4, required that degraded protected and vital areas be compensated with an equal level of protection. The inspector verified that vital area barriers that were either open or removed were appropriately compensated. Other deficiencies in security systems, such as a loss of assessment by the closed circuit television (CCTV) due to blockage by equipment was also observed to be appropriately compensated.

The inspector reviewed the licensee's plans to search the SGs prior to entry into the protected area. Temporary Order 003-2000 outlined officers' responsibilities and directed the use of engineers familiar with the SGs to perform the searches. Through review of training plans and interview of training personnel and engineers, the inspector determined the individuals assigned to search the steam generators were appropriately trained. Additionally, the inspector determined that the licensee's existing plan to control access during movement and work on the steam generators met the PSP requirements to control unauthorized equipment and access to containment.

c. Conclusions

The licensee's observed and planned compensatory measures, removal of protected and vital area barriers, steam generator search plans, and access control to containment during the steam generator replacement project met the requirements outlined in the PSP and implementing procedures.

F1 Control of Fire Protection Activities

F1.1 Control of Transient Combustibles (71750)

During routine tours of the plant, the inspectors noted that plant organizations, other than maintenance, were staging materials in safety related areas in preparation for the Unit 1 outage. For example, the inspectors identified that Operations staged over one hundred feet of tygon tubing in the 121 foot Piping Penetration Room (PPR) and that Health Physics (HP) staged several hundred pounds of plastic materials outside the Unit 1 containment personnel hatch, both safe shutdown related areas. The staged materials were typically either cloth or plastic products. None of these materials were being controlled or evaluated as transient combustibles.

The inspectors reviewed procedure FNP-0-ETP-3401, Transient Fire Load Analysis, Revision 4, for control of transient combustibles used during maintenance activities.

Procedure FNP-0-ETP-3401 allowed a work order to add 10,000 British Thermal Units (BTU)/ft^2 combustible loading to a room with no additional evaluation. However, this 10,000 BTU/ft^2 limit did not account for the in-situ combustible loading. The Final Safety Analysis Report (FSAR) stated that the screening evaluation would allow up to 10 percent of the allowable transient loading for a particular area without an additional evaluation. The inspectors reviewed the combustible load calculations for the Fire Area Hazards Analysis and determined that there were multiple safe shutdown related areas for which 10 percent of the allowable transient loading, taking into account the in-situ combustibles, was much less than the 10,000 BTU/ft^2 allowed in ETP-4301. There were several areas with nominal one hour fire barriers for which an additional 10,000 BTU/ft^2 would cause the total fire loading to exceed a one hour fire severity. The inspectors concluded that the 10,000 BTU/ft^2 allowance of ETP-3401 could allow the allowable fire loading to be exceeded in some areas because it did not take into account the existing in-situ combustibles.

Facility Operating License No. NPF-2, condition 2.C(4), required, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR for the facility. The FSAR, Appendix 9B, Fire Protection Program, Section 9B.2.2.2, Control of Combustibles, required that combustible materials be stored in proper storage areas separated from safe shutdown related areas by approved fire walls, doors, and ceilings and that administrative procedures exist that cover that control the storage of combustible materials in safety-related areas. Section 9.B.2.2 also required that if a combustible loading screening evaluation indicates that transient combustibles will exceed 10 percent of the allowable transient loading for the particular fire area, a quantitative transient fire load evaluation is performed and appended to the maintenance work order.

Contrary to the above, procedures did not control transient combustibles staged by Operations, HP, and Facilities personnel in preparation for the Unit 1 outage or transient combustibles used by these organizations during power operations. Plant procedures for combustible loading screening evaluations allowed exceeding 10% of the allowable transient loading for a particular fire area without requiring a quantitative transient fire load evaluation. This is identified as a Severity Level IV violation and is being treated as an NCV consistent with Section VII.B.1.a of the NRC Enforcement Policy. This is identified as NCV 50-348,364/00-02-04, Failure to Control Transient Combustibles. This violation is in the licensee corrective action program as Occurrence Report (OR) 1-2000-131.

The licensee removed the tygon tubing from the PPR, and walked down all safety-related areas for transient combustibles. No areas were found where combustibles actually exceeded design fire loadings or fire barrier ratings. The inspectors independently verified the total fire loads (in-situ and transient) of selected rooms containing nominal one hour fire barriers and concluded that they did not exceed the one hour fire severity load of 80,000 BTU/ft^2.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on March 31, 2000. An additional exit meeting was

conducted April 13, 2000 to discuss the issues delineated in Section O2.2. 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

R. V. Badham, Safety Audit Engineering Review Supervisor
C. L. Buck, Technical Manager
R. M. Coleman, Outage and Modification Manager
C. D. Collins, Operations Manager
K. C. Dyar, Security Manager
S. Fulmer, Plant Training and Emergency Preparadness Manager
J. S. Gates, Administration Manager
D. E. Grissette, Assistant General Manager - Operations
J. G. Horn, Outage Planning Supervisor
J. R. Johnson, Maintenance Manager
R. R. Martin, Engineering Support Manager
C. D. Nesbitt, Assistant General Manager - Plant Support
L. M. Stinson, Plant General Manager - FNP
R. J. Vanderbye, Emergency Prepardness Coordinator

Partial List of Opened, Closed, and Discussed Items

Type	Item Number	Description and Reference
Opened		
EEI	50-364/00-02-01	TS 3.0.5 Entered Due to Service Water Lubrication and Cooling Pumps Inoperable (Section O2.2)
NCV	50-348/00-02-02	Three Spent Fuel Assemblies in Spent Fuel Pool (SFP) Locations Not Allowed by TS 3.7.15 (Section E8.3)
NCV	50-348,364/00-02-03	Failure to Performed or Documented Quarterly Test to Contact On-call ERO Personnel (Section P1.1)
NCV	50-348,364/00-02-04	Failure to Control Transient Combustibles (Section F1.1)
Closed		
NCV	50-348/00-02-02	Three Spent Fuel Assemblies in Spent Fuel Pool (SFP) Locations Not Allowed by TS 3.7.15 (Section E8.4)

NCV	50-348,364/00-02-03	Failure to Perform or Document Quarterly Test to Contact On-call ERO Personnel (Section P1.1)
NCV	50-348,364/00-02-04	Failure to Control Transient Combustibles (Section F1.1)
LER	50-348/00-02	Unplanned AFW Actuation Upon Shutdown Of Both Steam Generator Feed Pumps (Section E8.1)
LER	50-348/00-03	Penetration Room Filtration Automatic Start During Fuel Sipping (Section E8.2)
LER	50-364/00-01-00	TS 3.0.5 Entered Due to Service Water Lubrication and 00-01-01 and Cooling Pumps Inoperable (Section O2.2)
LER	50-348/00-004	Three Fuel Assemblies in Wrong SFP Storage Locations Not Allowed by TS 3.7.15 (Section E8.3)

List of Inspection Procedures (IP) Used

IP 37551:	Onsite Engineering
IP 50001:	Steam Generator Replacement
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operation
IP 71750:	Plant Support Activities
IP 82701	Operational Status of the Emergency Preparadness Program
IP 92700:	LER Followup