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

March 18, 2004

Southern Nuclear Operating Company, Inc.
ATTN: Mr. L. M. Stinson
Vice President
P. O. Box 1295
Birmingham, AL 35201

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT - NRC SAFETY SYSTEM DESIGN AND PERFORMANCE CAPABILITY INSPECTION REPORT NOS. 05000348/2004006 AND 05000364/2004006

Dear Mr. Stinson:

On February 13, 2004, the Nuclear Regulatory Commission (NRC) completed a safety system design and performance capability inspection at your Farley Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on February 13, 2004, with Mr. R. Johnson and other members of your staff. Following completion of additional reviews in the Region II office, a final exit was held by telephone with Mr. D. Grissette and other members of your staff on March 15, 2004.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, no findings of significance were identified. However, one licensee-identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. If you contest this non-cited violation, 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 Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Farley site.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure: NRC Inspection Report Nos. 05000348/2004006, 05000364/2004006
w/Attachment: Supplemental Information

cc w/encl:
B. D. McKinney, Licensing
Services Manager, B-031
Southern Nuclear Operating
Company, Inc.
Electronic Mail Distribution

D. E. Grissette
General Manager, Farley Plant
Southern Nuclear Operating
Company, Inc.
Electronic Mail Distribution

J. B. Beasley, Jr.
Executive Vice President
Southern Nuclear Operating
Company, Inc.
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

(cc w/encl cont'd)
State Health Officer
Alabama Department of Public Health
RSA Tower - Administration
Suite 1552
P. O. Box 303017
Montgomery, AL 36130-3017

M. Stanford Blanton
Balch and Bingham Law Firm
P. O. Box 306
1710 Sixth Avenue North
Birmingham, AL 35201

William D. Oldfield
Quality Assurance Supervisor
Southern Nuclear Operating Company
Electronic Mail Distribution

Distribution w/encl:
S. Peters, NRR
C. Evans (Part 72 Only)
L. Slack, RII EICS
RIDSNRRDIPMLIPB
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| NAME | CORTES | JAPE | TAYLOR | SMITH | TELSON | MOORMAN | BONSER |
| DATE | 03/10 /2004 | 03/17/2004 | 03/10/2004 | 03/11/2004 | 03/ 17/2004 | 03/17/2004 | 03/ 18/2004 |
| E-MAIL COPY? | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO |
| PUBLIC DOCUMENT | YES NO | | | | | | |

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

| | |
|---|---|
| Docket Nos.: | 50-348, 50-364 |
| License Nos.: | NPF-2, NPF-8 |
| Report Nos.: | 05000348/2004006 and 05000364/2004006 |
| Licensee: | Southern Nuclear Operating Company, Inc. |
| Facility: | Farley Nuclear Plant |
| Location: | 7388 N. State Highway 95<br>Columbia, AL 36319 |
| Dates: | January 26-30, 2004 and February 9-13, 2004 |
| Inspectors: | J. Moorman, Lead Inspector<br>C. Smith, Senior Reactor Inspector<br>R. Telson, Resident Inspector, Sequoyah Nuclear Plant<br>R. Cortes, Reactor Inspector<br>R. Taylor, Reactor Inspector Intern<br>F. Jape, Senior Project Manager (Week 1 only) |
| Approved by: | Charles R. Ogle, Chief<br>Engineering Branch 1<br>Division of Reactor Safety |

Enclosure

## SUMMARY OF FINDINGS

IR 05000348/2004-006, 05000364/2004-006; 01/26-30/2004 and 02/09-13/2004;
Joseph M. Farley Nuclear Plant, Units 1 & 2; Safety System Design and Performance Capability Inspection.

This inspection was conducted by a team of regional inspectors and a visiting resident inspector. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

## 1. REACTOR SAFETY

### Cornerstones: Initiating Events and Mitigating Systems

1R21 Safety System Design and Performance Capability (71111.21)

This team inspection reviewed selected components and operator actions that would be used to prevent or mitigate the consequences of a steam generator tube rupture (SGTR) event. Components in the main steam (MS), auxiliary feedwater (AFW), steam generator (SG) blowdown, chemical volume and control (CVCS), reactor coolant (RCS), and radiation monitoring systems were included. This inspection also covered supporting equipment, equipment which provides power to these components, and the associated instrumentation and controls. The SGTR event is a risk-significant event as determined by the licensee's probabilistic risk assessment.

.1 System Needs

.11 Process Medium

a. Inspection Scope

The team reviewed the AFW and high head safety injection (HHSI) net positive suction head (NPSH) and water source calculations, licensing and design basis information, operating/lineup procedures, drawings, surveillance procedures and vendor manuals. The review included the refueling water storage tank (RWST), the condensate storage tank (CST), including vortexing considerations, and minimum-flow flowpaths for AFW and HHSI pumps. The review also included the ability of the SG atmospheric relief valves (ARVs) to support RCS cooldown, and the ability of the HHSI pumps to provide cooling of the RCS. The team also conducted field walkdowns of the systems in the plant with primary emphasis on Unit 1. The reviews and walkdowns were conducted to verify that system design, Technical Specifications (TS), and Updated Final Safety Analysis Report (UFSAR) assumptions were consistent with the actual capability of systems and equipment required to mitigate an SGTR event.

The team conducted field walkdowns of Unit 1 electrical components determined to be risk-important for the SGTR event. These walkdowns were conducted to verify that system design, TS, and UFSAR assumptions were consistent with the actual capability of systems and equipment required to mitigate an SGTR event. Components reviewed included feed breaker DF02 from Bus 1F; Load Center 1D; Station Service Transformer 1D and its supply breaker; the supply breaker to motor control center (MCC) 1U; feed breaker DG02 from Bus 1G; Load Center 1E; Station Service Transformer 1E and its supply breaker; MCC 1V and it's supply breaker; and Bus 1.

b. Findings

No findings of significance were identified.

.12 Energy Sources

a. Inspection Scope

The team reviewed valve lineup procedures and walked down the energy sources of selected components to verify that selected portions of the systems alignment were consistent with the design basis assumptions, performance requirements, and system operating procedures. Among the lineups reviewed were the steam supply to the turbine-driven AFW pump and the sources of air for air operated valves (AOVs) such as the SG ARVs. The team also reviewed the testing and maintenance history for the SG ARVs, including the availability, and reliability of alternate air sources for proper operation of these valves to verify that the system design basis assumptions were consistent with the actual capability of the system.

The team reviewed appropriate test and design documents to verify that the 125 Volts direct current (V dc) and 4.16 kiloVolt alternating current (kV ac) power sources for the AFW and HHSI systems electric pumps and motor-operated valves would be available and adequate in accordance with design basis documents. The team also reviewed MCC design documents to verify appropriate sizing for selected MCC components.

b. Findings

No findings of significance were identified.

.13 Instrumentation and Controls

a. Inspection Scope

Secondary Side Radiation Monitors

The team reviewed completed surveillance test records for the main steam relief and SG ARV discharge radiation monitors, the AFW pump turbine exhaust radiation monitor, the condenser air ejector gas radiation monitor, and the steam generator blowdown liquid radiation monitor. These reviews were conducted to verify that these radiation monitors were sufficiently accurate to comply with licensing and design bases requirements as demonstrated by the as-found and final values documented on the calibration data sheets.

Emergency Feed Water Suction Sources

The team reviewed calibration records for the RWST and CST level instruments, the main steam line pressure transmitters, steam generator wide range and narrow range

level instruments, steam generator pressure instruments, and the pressurizer level instruments. This review was conducted to verify that these instruments were sufficiently accurate to demonstrate compliance with the plant's licensing bases as shown by the as-found and as-left conditions. The review was also conducted to verify that the plant calibration procedures had correctly incorporated the tolerances identified in the loop uncertainty calculation for instruments.

b. Findings

No findings of significance were identified.

.14 Operator Actions

a. Inspection Scope

The team reviewed the Emergency Operating Procedures (EOPs) used to mitigate an SGTR to determine if the specified operator actions were consistent with the accident analysis and Westinghouse Owners Group (WOG) guidelines. The team compared the SGTR EOP to the WOG guidelines and step-deviation document to verify that the Farley EOP was consistent with the guidelines and that any deviations were analyzed.

The team observed licensed plant operators perform the SGTR EOP and abnormal operating procedures on the plant simulator in response to a simulated steam generator tube leak followed by an SGTR. This review was conducted to verify that the SGTR mitigation strategy in the EOPs would be implemented and that assumptions and results specified in the UFSAR and the WOG Guidelines would be met. This observation was also conducted to verify that control board indication and plant alarms provided adequate information to the operators to support procedurally required decisions that would result in successful event mitigation.

b. Findings

No findings of significance were identified.

.15 Heat Removal

a. Inspection Scope

The team reviewed design calculations, drawings, surveillance and test procedures, and operating data for selected equipment to assess the reliability and availability of cooling for equipment required to mitigate an SGTR event. The team also conducted field walkdowns of the equipment to verify that operating conditions were consistent with design assumptions. The equipment reviewed included HHSI and AFW pumps and testing of these pumps at both full and minimum flow conditions. The team also verified that test results demonstrated adequate cooling of the pump's bearings and that room

coolers for the low head safety injection and HHSI pumps were adequate to ensure room cooling during design basis events.

The team reviewed historical temperature data for the Unit 1 station battery rooms to verify that the room temperatures remained within allowable temperature limits specified for the batteries.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

.21 Installed Configuration

a. Inspection Scope

The team performed field walkdowns of selected components in the HHSI, AFW, MS, service water (SW), and component cooling water (CCW) systems to assess observable material condition and the installed configuration of components. Particular attention was placed on verifying that selected valves and components in these systems were in their required position and that the configuration was consistent with design drawings. The team also inspected selected controls and indicators for appropriate human factors considerations, such as labeling arrangement and visibility.

The team performed field walkdowns of the CST and RWST level instruments. These walkdowns were performed in order to assess the observable material condition and to inspect the installed configurations for compliance with approved instrument installation drawings. The team also verified that the installed instruments were provided with freeze protection in accordance with the requirements shown on the installation drawings.

The team performed field walkdowns of selected portions of the 125 V dc and 4.16 kV ac systems to verify that the installed configuration was consistent with design basis information, to assess observable material condition, installation configuration, and identify degraded conditions of those components that could be used to mitigate an SGTR event. The team also inspected selected controls and indicators for appropriate human factors such as labeling arrangement and visibility.

b. Findings

No findings of significance were identified.

.22 Operation

a. Inspection Scope

The team performed field walkdowns of selected components specified in the SGTR EOP for which local operation was required, to verify that operators could adequately determine component status and that the components could be operated under conditions that would exist during an SGTR event. These components included the TDAFW steam supply AOVs, their isolation valves, and the associated air system valves. The team performed field walkdowns of the SG ARV discharge lines to verify that radiological survey points specified by Procedure FNP-0-RCP-25, "Health Physics Activities During A Radiological Accident," were appropriately marked, readily visible, and accessible for local radiation monitoring.

The team reviewed the quality control documentation for the primary-to-secondary leak rate determination computer program to verify that the program was developed, tested, and maintained using quality control standards.

b. Findings

No findings of significance were identified.

.23 Design

a. Inspection Scope

Mechanical Design

The team reviewed vendor manuals for the HHSI and AFW pumps, vendor manuals for selected check valves, the UFSAR, and the TS to verify that vendor recommendations and licensing basis requirements had been appropriately translated into the design calculations and surveillance requirements. In addition, NPSH calculations and head curve data for both the AFW and HHSI pumps were reviewed to verify that adequate water levels were available in the CST and RWST. Vortexing considerations were also reviewed.

The team reviewed records of design changes and preventive maintenance; and performed field walkdowns of selected components in the HHSI, SW, CCW, MS, and AFW systems to verify that these activities were maintaining the assumptions of the licensing and design bases. During these reviews, the team focused on potential common mode failure vulnerabilities that could be introduced by design or maintenance activities.

Electrical Design

The team reviewed emergency diesel generator loading calculations for both loss of off-site power and safety injection scenarios to assess the adequacy to provide electrical power for selected components required to mitigate an SGTR event.

The team reviewed portions of document A-181987 “Motor Starter Control Documentation of an Engineering Judgment” addressing the operability of MCC 1V, compartment S2 with an undersized control power transformer. This review was conducted to verify that minimum operable voltage design bases and design assumptions had been appropriately translated into design calculations and procedures.

Instrumentation and Control

The team reviewed design change package (DCP) S001-9562-0-003, “Rescale RWST Level Transmitters & Delete Alarms,” and document A-508666, “Scaling for RWST Level Loops.” The reviews were performed to verify that main control room indications and set point alarms associated with rescaling of the RWST level transmitters had been correctly incorporated into plant calibration and operation procedures. The team also reviewed completed surveillance tests performed in accordance with the requirements of TS SR 3.5.4.2 for the RWST in order to verify that “Required Value” criteria delineated in the calibration procedures for indications and alarms were consistent with the values documented in the set point and scaling document and the loop uncertainty calculation.

The team evaluated DCP No. B95-2-8865-1-005, “R60 Radiation Detector Enhancement” and the associated 10 CFR 50.59 evaluation to verify that the design changes were consistent with the plant licensing and design bases.

b. Findings

No findings of significance were identified.

.24 Testing and Inspection

a. Inspection Scope

The team reviewed records of completed surveillance tests, performance tests, inspections, and predictive maintenance; and performed field walkdowns of selected components in the HHSI, AFW and MS systems to verify that the tests and inspections were appropriately verifying that the assumptions of the licensing and design bases were being maintained. This review included testing of pump discharge pressures and flowrates during full and recirculation flow conditions, valve stroke times, motor operated valve (MOV) torque and limit switch settings, and check valve operation; and analysis of pump bearing oil and vibration. A more detailed list of the components is provided in the Attachment.

The team evaluated test records, including preventive maintenance and performance tests results for 125 V dc batteries 1A and 1B to verify that the batteries were capable of meeting design basis load requirements. The team also reviewed performance test results for several motor operated valve controllers to verify that motor operated valves would perform under design minimum voltage conditions. A more detailed list of the components reviewed is provided in the Attachment.

b. Findings

No findings of significance were identified.

.3 Selected Components

.31 Component Degradation

a. Inspection Scope

The team reviewed system health reports, Maintenance Rule functional failures, maintenance records, condition reports, and performance trending of selected components in the HHSI, MS, SW, AFW and MS systems to verify that components that were relied upon to mitigate an SGTR event were not degrading to unacceptable performance levels. Among the selected components were AOVs, MOVs, check valves, room coolers and pumps. A more detailed list of components reviewed is provided in the Attachment. The team verified the turbine driven AFW steam supply piping for inclusion of steam traps that would compensate for water accumulation in the piping system and prevent occurrences of water hammer or pump overspeed trip events.

The team reviewed system health reports, corrective maintenance records, condition reports, and performance trending of selected components in the electrical distribution and control systems to verify that components that could be relied upon to mitigate an SGTR event were not degrading to unacceptable performance levels. The selected components included motor operated valve controllers, 125 V dc station batteries and chargers.

The team reviewed preventive maintenance and testing records for 125 V dc batteries and chargers as well as the testing records for MOV controllers to verify the program was being implemented. Additionally, the team examined corrective maintenance records for selected 4.16 kV circuit breakers to assess the licensee's corrective actions to maintain the safety function, reliability, and availability of the components in the system. Also, the team reviewed commercial grade dedication packages for selected Class 1E electrical components to evaluate their technical adequacy and to verify that quality assurance requirements were being met.

The team also reviewed an NRC-prompted engineering determination of operability addressing an undersized control power transformer (CPT) in safety-related Motor Control Center (MCC) 1V, Cell S2, the controller for the Unit 1 Accumulator Discharge

Motor-Operated Valve (MOV) Q1E21MOV8808B, along with related design basis and component testing documents, to verify that minimum voltage design bases and design assumptions had been appropriately translated into design calculations, plant configuration, and testing procedures.

b. Findings

Undersized Control Power Transformers (CPTs) in Safety-Related Motor Control Center

Introduction: The team identified an unresolved item related to the adequacy of plant design basis documents and performance of contactors in safety-related MOV starters under minimum design voltage conditions.

Description: On January 27, 2004, during an equipment walkdown, the team observed a deficiency tag attached to MCC 1V, Cell S2, the controller for Q1E21MOV8808B. This valve is the Unit 1 Accumulator Discharge MOV. The deficiency tag, dated July 5, 2003, identified that the installed 200 volt-amp CPT was undersized according to document A-181987, "Fuse Replacement Manual for Unit 1, And Unit 1 & Unit 2 Shared Safety Related Equipment." Document A-181987 indicated that the correct CPT size was 250 volt-amps. Based on a review of historical documents, the team determined that a condition report (CR) had not been generated for this non-conforming condition. As a consequence, an engineering operability determination had not been performed to assess the impact of the undersized CPT on component performance under design minimum voltage conditions nor had the cause or extent of the condition been evaluated. Following team questions on the lack of an operability determination and extent of condition review, these issues were placed into the licensee's corrective action program on January 29, 2004 as CR's 2004000377 and 2004000378.

The licensee confirmed that the installed CPT was undersized and replaced it with a 250 volt-amp CPT on January 30, 2004. An operability evaluation of the original deficiency was completed on February 4, 2004. The team reviewed the operability evaluation and discussed it with engineering personnel. According to licensee calculations, the MCC remained operable under design minimum voltage conditions. However, little margin remained for actual contactor performance to vary from the pickup voltage used in design basis calculations. The team requested the licensee to provide contactor testing data to verify that actual contactor performance met or exceeded design basis assumptions.

On February 10, 2004 the licensee provided test data for the affected contactors that was obtained in an October 1992 performance of electrical maintenance Procedure FNP-0-EMP-1513.01, "ITE Magnetic Starters and Overload Relays." The data indicated pickup voltages of 86.1 and 90.7 volts. The two values reflect the use of two sets of contactors, one set to open the MOV and the other to close the MOV. The test acceptance criteria for pickup voltage was "no greater than 80 percent of 120 volts, or 96 volts." The team observed that, while the contactors satisfied the test acceptance criteria, the criteria and the as-tested performance did not appear to satisfy the design

basis requirement that starter contacts pick-up at no more than 85.2 volts. The team requested documentation addressing the bases for the 96 volt test acceptance criteria, the 85.2 volt design voltage, and an explanation of the apparent inconsistency between the design basis document, test acceptance criteria, and as-tested component performance. On February 12, 2004 the licensee initiated CR 2004000589 which documented that the basis for and purpose of the Procedure FNP-0-EMP-1513.01 testing methodology and acceptance criteria were unclear.

The licensee informed the team that Procedure FNP-0-EMP-1513.01 evaluated the contactor minimum pickup voltage by applying a continuously increasing voltage until the contactor was observed to actuate. This voltage was recorded as the minimum pick-up voltage. The licensee stated that in actual operation, the contactor would receive a step application of voltage that would, by design, be greater than or equivalent to 85.2 volts under the most limiting voltage conditions. The licensee further stated that, due to the inductive nature of contactor coils, a step application of voltage would result in contactor pickup at a lower voltage as compared with the application of a slowly increasing voltage. There was a 13 percent difference between the design pickup voltage (85.2 volts) and test acceptance criteria pickup voltage (96 volts) and a six percent difference between the higher as-tested pickup voltage (90.7 volts) and the design pickup voltage. The team requested the licensee to provide objective evidence that the test method employed would produce minimum pickup voltage values with that much error. The data provided to the team by the licensee to support this determination was inconclusive.

The team also reviewed contactor test data for the open and closed contactors of four additional safety-related MOV starters. Of these, three of the eight tests for contactor pickup voltages were above 85.2 volts. The team noted that there was significant variability in the tested contactor pickup voltages. The test-observed pick-up voltages ranged from approximately 61 to 91 volts in the five MOV starters reviewed by the team. Fifty percent of the tested contactors reviewed tested with pick-up voltages higher than the design-specified 85.2 volts.

The team conducted a limited extent-of-condition review by performing a plant walkdown of five additional MCCs to evaluate the as-found configuration with regard to installed fuses and CPTs. Of these five MCCs, only one was of a size similar to the MCC for Valve Q1E21MOV8808B (ie. specified for a 250 volt-amp CPT). The team observed that it was also incorrectly configured with an (undersized) 200 volt-amp CPT. The licensee initiated CR 2004000594 to evaluate the operability of the associated MOV and to perform an extent of condition review. The licensee determined this MCC was operable.

The team reviewed specifications for contactor pickup voltage in the contactor vendor manual and engineering information provided by the vendor, as well as contactor pickup voltage data from testing performed by Southern Company Services. The applicable ITE vendor manual stated that for Size 3, 120 Vac starters, the pickup voltage was 78% (93.6 volts) when using a CPT and was 69% (82.8 volts) when not using a CPT. This

indicated that contactor pickup voltages would typically be higher when contactors were energized with a CPT (similar to the installed configuration at Farley) than when energized using line voltage. A performance evaluation test of Size 3 starters documented in Southern Company Services Project No. 92-076, "Agastat Relay and ITE Contactor Performance Evaluation," indicated an average pickup voltage of 81.66 volts (68%). This evaluation did not state if the test was performed with or without the use of a CPT. Engineering information provided by the vendor when the contactors were purchased stated that the contactor minimum pickup voltage was 71% (85.2 volts). However, this information did not state whether the 71% value was determined with or without using a CPT. The team could not determine if the contactors currently installed in Size 3 starters would pickup at the 78% voltage stated in the vendor manual or if they would pick up at 71% voltage as stated in the engineering information provided by the vendor. As a result, the team could not ensure that the selection of 85.2 volts (71%) as the design minimum pickup voltage was acceptable

Pending the licensee's determination of the applicability of Procedure FNP-0-EMP-1513.01 test results to the actual contactor performance and the acceptability of using 85.2 volts as the design minimum contactor pickup voltage, this issue is identified as Unresolved Item 05000348/2004006-01; 05000364/2004006-01, "Adequacy of Plant Design Basis Documents and Performance of Contactors in Safety-related MOV Starters Under Minimum Design Voltage Conditions."

.32 Equipment/Environmental Qualification

a. Inspection Scope

The team performed field walkdowns to observe whether the selected electrical components and connections to those components appeared to be suitable for the environment expected under all conditions, including high energy line breaks. Specific attention was paid to the potential operating environment for safety-related MCCs 1V and 1U.

b. Findings

No findings of significance were identified.

.33 Equipment Protection

a. Inspection Scope

The team performed field walkdowns of selected components in the HHSI, AFW, MS, service water (SW), component cooling water (CCW), 125 V dc and 4.16 kV ac systems to verify that the components were adequately protected from potential effects of flooding, high winds, missiles, and high or low outdoor temperatures

b. Findings

No findings of significance were identified.

.34 Operating Experience

a. Inspection Scope

The team reviewed the licensee's disposition of operating experience reports related to the SGTR events SGTR-related issues. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

a. Inspection Scope

The team reviewed selected system health reports, maintenance rule reports, condition requests, surveillance tests, and maintenance work orders to verify that the licensee had appropriately identified and resolved problems.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The lead inspector presented the inspection results to Mr. R. Johnson, and other members of the licensee staff, at an exit meeting on February 13, 2004. Following completion of additional reviews in the Region II office, a final exit was held by telephone with Mr. D. McKinney, Farley Licensing Services Manager and Mr. D. Grissette, General Manager, Farley Plant, on March 15, 2004. The licensee acknowledged the findings presented. Proprietary information is not included in this inspection report.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation.

- 10 CFR 50 Appendix B, Criterion III, Design Control, requires that design bases be correctly translated into specifications, drawings, procedures and instructions. Design document FTG-J-001, "Project Technical Guide for Instrumentation and Controls Design Criteria," Section 11.3, "Scaling Processes and Guidelines" specifies requirements to ensure that scaling for pressure, level, and flow instruments shall include appropriate hydrostatic head correction and density compensation factors. Contrary to the above, Calculation SJ-98-1693-001, "Calculation to establish the set point uncertainty for the RWST level loops," did not include density compensation for the concentration of boric acid solution in the Refueling Water Storage Tank. This was identified in the licensee's corrective action program as condition report 2003800303. This finding is of very low safety significance because it did not affect the operabilty of the Refueling Water Storage Tank.

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee
B. Arens, Unit Supervisor
R. Badham, Administrative Manager
M. Coleman, Outage and Modifications Manager
P. Crone, Licensing Supervisor
R. Fucich, Maintenance Superintendent
R. Johnson, Assistant General Manager - Operations
J. Kale, Licensing Engineer
D. Lisenby, Engineering Manager
D. McKinney, Services Manager, Corporate Licensing
C. Nesbitt, Training Manger
B. Oldfield, Quality Assurance Supervisor
R. Rogers, Engineering Support Supervisor
J. Seay, Licensing Engineer

NRC (attended exit meeting)
R. Fanner, Resident Inspector
C. Patterson, Senior Resident Inspector

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

| | | |
|---|---|---|
| 05000348/2004006-01<br>05000364/2004006-01 | URI | Adequacy of Plant Design Basis Documents and Performance of Contactors in Safety-related MOV Starters Under Minimum Design Voltage Conditions (Section .31) |

ATTACHMENT

## LIST OF DOCUMENTS REVIEWED

Condition Reports (CR)

2000005056, Lube manual FNP-1-M-14 for Unit 1 references the incorrect air compressors
2000005721, The Bill of Materials for certain work orders requested the wrong solenoid valve for the Main Steam Atmospheric Relief Valves.
2001001277, Repeated steam leaks and repeated sealing of same, using Furmanite
2001002278, Large paint chip was observed in the outboard bearing housing of the TDAFW Pump
2001003097, Check Valve Q1E21V115A failed STP-166 (reverse leakage test)
2002000114, A&E steam dumps performance has been unsatisfactory
2002000567, RWST level dropped due to hydro-test pump suction from RWST leaking by (Q1E21V0028)
2002000573, The Hydro-Test pump will not be tagged per the POD due to inability to assure adequate isolation from the RWST
2002000656, During NRC AFW SSDI walkdown, it was noted that a small section of the steam inlet did not have a means of draining condensate buildup
2002000659, Natural circulation cooldown required 175gpm of AFW at 6 hours, CST does not contain a minimum specification sufficient water for natural cooldown.
2002000810, Q1P17TV3083 was discovered to be 180 degrees out of position
2002001490, While running FNP-2-STP-11.11, 2A RHR Pump Operability check, it was determined that acceptance criteria for flow was not met
2003000020, During 2A RHR quarterly inservice test, the 2A RHR discharge valve, HCV603A did not operate smoothly and the required flow could not be established for the STP
2003001438, Repeat problem on HCV603A not stroking smoothly during quarterly inservice test
2003001523, 1B Charging Pump had pumped the oil out of the reservoir
2004000544, TDAFW Pump quarterly STP-22.16 was run and recorded vibration readings in the Alert Range.

Work Orders

00659833, Perform MC^2 test per FNP-0-EMP-1501.18 on valve Q1E21LCV0115D
02000336, DCP-9562; Rescale Level Transmitter in accordance with DCP package
537145, Seal water tank for Hydro-Test pump is overflowing to drain
00604679, Perform FNP-0-EMP-1501.05 (MOVATS) MC^2 test on Q1E21MOV8132A
00604680, Perform FNP-0-EMP-1501.05 (MOVATS) MC^2 test on Q1E21MOV8132B
00659831, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21LCV0115B
00659833, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21LCV0115D
00659836, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8107

00659837, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8108

00659843, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8803A
00659844, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8803B
00662859, Perform FNP-0-EMP-1501.05 (MOVATS); Limit Switch grease inspection and Limit Switch compartment inspection of the torque switches Q1E21MOV8132A
00662860, Perform FNP-0-EMP-1501.05 (MOVATS); Limit Switch grease inspection and Limit Switch compartment inspection of the torque switches Q1E21MOV8132B
00689655, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21LCV0115B
00689657, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21LCV0115D
00689667, Perform full test per FNP-0-EMP-1501.17 on valve Q1E21MOV8107
00689668, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8108
00689678, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8803A
00689679, Perform MC^2 test per FNP-0-EMP-1501.18 or applicable 1501.17 on valve Q1E21MOV8803B
4000983, During FNP-1-STP-22.16, the rated speed for TDAFW could not be reached
2001817, TDAFWP monitoring and testing system install stem connector 3/26/02
1005304, Perform design basis verification 7/30/01
2001893, Modify stem connector bolt 4/01/02
3001959, Air regulator blowing air 3/30/03
00689890, TDAFWP Steam Supply Isolation Valve maintenance 4/20/03
00689889, TDAFWP Steam Supply Isolation Valve maintenance 4/05/03
00663044, TDAFWP Steam Supply Isolation Valve maintenance 10/27/03
3008196, Clean outside of the tubes on room cooler 11/21/03
3008199, Perform ETP 4447 after room cooler is cleaned 11/21/03
99007911, CVCS Seal Injection Leakage Repair 10/21/99
00674629, Test the 1A charging pump room cooler 11/15/01
00702293, Test the 2C charging pump room cooler 3/13/03
00702291, Test the 2A charging pump room cooler 3/13/03
00674675, Test the 2A charging pump room cooler 11/15/01
00674676, Test the 2B charging pump room cooler 11/15/01
00702251, Test the 1A charging pump room cooler 3/13/03
00702253, Test the 1C charging pump room cooler 3/13/03
00674631, Test the 1C charging pump room cooler 11/15/01
00702252, Test the 1B charging pump room cooler 3/13/03
00674630, Test the 1B charging pump room cooler 11/15/01
00674677, Test the 2C charging pump room cooler 11/15/01
00702292, Test the 2B charging pump room cooler 3/13/03

02002345, Test the 2C charging pump room cooler 4/22/02
3007671, Evaluate condition of 1C charging pump within 96 hours 1/28/04

Calculations

26.9, Air Cooler's Air Inlet Temperature in function of Cold Water Inlet Temperature, Rev. 0
36.12, Auxiliary Building Temperatures of Rooms Cooled (sheets 1 through 10), Rev. 4
E-123, Heat Loads Contributed by Electrical Equipment in Unit 2 Aux. Building Rooms Cooled by Service Water (sheets 1-7A, 10-14, 26-27, and 36-41), Rev. 3
34.2, Heat Loads Contributed by Mechanical Equipment, Rev. 2
BM-97-1547-001, RWST Pipe Outlet Submergence Analysis, Rev. 0
BM-95-0961-001, Verification of CST Sizing Basis, Rev. 4
CN-00-0163, RWST Maximum Draindown Rate (SM-94-0452-001, Rev. 4) Rev. A
SM-97-1407-002, CST Low-Low- Level Setpoint, Rev. 0
11.13, Available NPSH for Auxiliary Feedwater Pumps, Rev. 0
SM-94-0452-001, RWST Depletion during LOCA and Switchover to Recirculation, Rev. 4
SJ-98-1693-001, Calculation to establish the set point uncertainty for the RWST level loops, Revision 3
SJ-98-1693-003, Calculation to establish the set point uncertainty for the RWST level switches Q1/2F16LS-507, Q1/2F16LS-508, Q1/2F16LS-515, and Q1/2F16LS-516 Revision 0
SJ-97-1407-001, Calculation to establish the total loop uncertainty for loops L-515 and L-516, Revision 0
RBA 03-015-F, Plant Response to SGTR as modeled in Revision 5 Farley PRA, taken from Revision 5 PRA Summary Report
SE-91-1976-1, Motor Starter Control Circuit, Revision 5
SE-94-0470-004, Unit 1 Load Study Summary, Revision 3
E-082, Plant Electrical Distribution System Coordination Study, Revision 8

Design Change Packages (DCP)

DCP No. S001-9562-0-003, Rescale RWST Level Transmitters and Delete Alarms, dated 12/30/2002
Document No. A-508666, Scaling for RWST Level Loops Q1/2F16LT501 and Q1/2F16LT502 and for the RWST Level Switches Q1/2F16LS507, Q1/2F16LS508,Q1/2F16LS515 Q1/2F16LS516
DCP No. B95-2-8865-1-005, R60 Radiation Detector Enhancement, dated 07/28/2000

Procedures
FNP-0-CCP-31, Leak Rate Determination, Rev. 27
FNP-0-CCP-645, Main Steam Abnormal Environmental Release, Rev. 9
FNP-0-EMP-1501.05, MOV Preventative Maintenance Flowpath
FNP-0-EMP-1501.17, Testing,Analyzing and Troubleshooting MOVs
FNP-0-EMP-1513.01, Electrical Maintenance Procedure, ITE Magnetic Starters and Overload Relays, Version 27
FNP-0-ETP-4447, Temperature Effectiveness Test for Safety Related Room Coolers

FNP-0-MP-18.3, Kerotest Check Valves Inspection and Rework
FNP-0-MP-5.4, Maintenance of Charging / High Head Safety Injection Pump
FNP-0-RCP-25, Health Physics Activities During a Radiological Accident, Rev. 43
FNP-0-SOP-2.8, Charging Pump Lubrication Procedure
FNP-1-AOP-2.0, Steam Generator Tube Leakage, Rev. 27
FNP-1-EEP-0, Reactor Trip or Safety Injection, Rev. 28
FNP-1-EEP-3, Steam Generator Tube Rupture, Rev. 21
FNP-1-EEP-3, 5.20.03
FNP-1-M-040, Justification of Steam Generator Tube Rupture
FNP-1-SOP-62.0, Emergency Air System
FNP-1-STP-168, Non-Intrusive Forward Flow Testing of Safety Injection Check Valves
FNP-1-STP-22.1, 1A Auxiliary Feedwater Pump Quarterly Inservice Test
FNP-1-STP-22.16, Turbine Driven AFW Quarterly Inservice Test
FNP-1-STP-22.19, AFW Normal Flow Path Verification
FNP-1-STP-22.2, 1B Auxiliary Feedwater Pump Quarterly Inservice Test
FNP-1-STP-22.20, TDAFW Pump Steam Admission Valves Air Accumulator Test, Rev. 9
FNP-1-STP-4.1, 1A Charging Pump Quarterly Inservice Test
FNP-1-STP-4.10, Reverse Flow Test of RWST to Charging Pump Check Valve
FNP-1-STP-4.2, 1B Charging Pump Quarterly Inservice Test
FNP-1-STP-4.3, 1C Charging Pump Quarterly Inservice Test
FNP-1-STP-40.0, Safety Injection With Loss of Off-site Power Test
FNP-1-STP-40.7, ECCS Branch Line and Charging Pump Low Discharge Head Test
FNP-1-STP-40.8, ECCS Branch Line and Charging Pump Low Discharge Head Test
FNP-1-STP-644.5, Velan Type 6C88, 6 Inch Swing Check Valve Full Stroke Test
FNP-2-STP-22.1, 2A Auxiliary Feedwater Pump Quarterly Inservice Test
FNP-2-STP-22.2, 2B Auxiliary Feedwater Pump Quarterly Inservice Test
FNP-2-STP-4.1, 2A Charging Pump Quarterly Inservice Test
FNP-2-STP-4.2, 2A Charging Pump Quarterly Inservice Test
FNP-2-STP-4.3, 2C Charging Pump Quarterly Inservice Test
Job Performance Measure SO-610G, Isolate Steam Supply from the “B” SG to the TDAFW Pump, 3/26/02
NMP-GM-002, Corrective Action Program, Version 1.0

Surveillance Test Procedures

Surveillance Test Procedure, FNP-1-STP-205.2, Refueling Water Storage Tank Level Q1F16LT0502 Loop Calibration, Version 14.0
Surveillance Test Procedure, FNP-1-STP-205.2, Refueling Water Storage Tank Level Q1F16LT0502 Loop Calibration, Version 14.0
FNP-1-STP-205.1A, Surveillance Test Procedure Data Package, Refueling Water Storage Tank Level Q1F16LT0501 Loop Calibration, Dated 01-10-2003
FNP-1-STP-205.1A, Surveillance Test Procedure Data Package, Refueling Water Storage Tank Level Q1F16LT0501 Loop Calibration, Dated 08-20-2001
FNP-1-STP-205.1A, Surveillance Test Procedure Data Package, Refueling Water Storage Tank Level Q1F16LT0501 Loop Calibration, Dated 02-29-2000

FNP-1-STP-213.1A, Surveillance Test Procedure Data Package, Steam Generator 1AQ1C22LT0474 Loop Calibration, Dated 03-16-2003
FNP-1-STP-213.2A, Surveillance Test Procedure Data Package, Steam Generator 1AQ1C22LT0475 Loop Calibration, Dated 04-12-2003
FNP-1-STP-213.3A, Surveillance Test Procedure Data Package, Steam Generator 1AQ1C22LT0476 Loop Calibration, Dated 03-21-2003
FNP-1-STP-213.13A, Surveillance Test Procedure Data Package, Steam Generator Wide Range Level 1AQ1C22LT0477 Loop Calibration, Dated 04-10-2003
FNP-1-STP-213.4A, Surveillance Test Procedure Data Package, Steam Generator 1BQ1C22LT0484 Loop Calibration, Dated 03-10-2003
FNP-1-STP-213.5A, Surveillance Test Procedure Data Package, Steam Generator 1BQ1C22LT0485 Loop Calibration, Dated 04-12-2003
FNP-1-STP-213.6A, Surveillance Test Procedure Data Package, Steam Generator 1BQ1C22LT0486 Loop Calibration, Dated 03-27-2003
FNP-1-STP-213.14A, Surveillance Test Procedure Data Package, Steam Generator Wide Range Level 1BQ1C22LT0487 Loop Calibration, Dated 04-10-2003
FNP-1-STP-213.7A, Surveillance Test Procedure Data Package, Steam Generator 1CQ1C22LT0494 Loop Calibration, Dated 03-6-2003
FNP-1-STP-213.8A, Surveillance Test Procedure Data Package, Steam Generator 1CQ1C22LT0495 Loop Calibration, Dated 04-12-2003
FNP-1-STP-213.9A, Surveillance Test Procedure Data Package, Steam Generator 1CQ1C22LT0496 Loop Calibration, Dated 03-21-2003
FNP-1-STP-213.15A, Surveillance Test Procedure Data Package, Steam Generator Wide Range Level 1BQ1C22LT0497 Loop Calibration, Dated 04-10-2003
FNP-1-STP-213.25A, Surveillance Test Procedure Data Package, Main Steam to Atmosphere Relief Valve Control Q1N11PT3371A Loop Calibration, Dated 04-19-2003
FNP-1-STP-213.26A, Surveillance Test Procedure Data Package, Main Steam to Atmosphere Relief Valve Control Q1N11PT3371B Loop Calibration, Dated 04-19-2003
FNP-1-STP-213.27A, Surveillance Test Procedure Data Package, Main Steam to Atmosphere Relief Valve Control Q1N11PT3371C Loop Calibration, Dated 04-18-2003
FNP-1-STP-213.10A, Surveillance Test Procedure Data Package, Steam Generator 1A Q1N11PT0474, Steam Generator 1B Q1N11PT0484, and Steam Generator 1C Q1N11PT0494, Loop Calibration, Dated 04-02-2003
FNP-1-STP-213.10A, Surveillance Test Procedure Data Package, Steam Generator 1A Q1N11PT0475, Steam Generator 1B Q1N11PT0485, and Steam Generator 1C Q1N11PT0495, Loop Calibration, Dated 04-02-2003
FNP-1-STP-213.10A, Surveillance Test Procedure Data Package, Steam Generator 1A Q1N11PT0476, Steam Generator 1B Q1N11PT0486, and Steam Generator 1C Q1N11PT0496, Loop Calibration, Dated 04-02-2003
FNP-1-STP-201.1A, Surveillance Test Procedure Data Package, Pressurizer Level Q1B31LT0459, Loop Calibration, Dated 04-13-2003
FNP-1-STP-201.2A, Surveillance Test Procedure Data Package, Pressurizer Level Q1B31LT0460, Loop Calibration, Dated 04-13-2003

FNP-1-STP-201.3A, Surveillance Test Procedure Data Package, Pressurizer Level Q1B31LT0461, Loop Calibration, Dated 04-13-2003
FNP-1-STP-201.29A, Surveillance Test Procedure Data Package, Pressurizer Level Q1B31LT0459Z Loop Calibration, Dated 04-15-2003
FNP-1-STP-227.20A, Surveillance Test Procedure Data Package, Main Steam Relief and Atmospheric Steam Dump Discharge Monitor N1D11Re0060A Calibration, Dated 04-19-2003
FNP-1-STP-227.21A, Surveillance Test Procedure Data Package, Main Steam Relief and Atmospheric Steam Dump Discharge Monitor N1D11Re0060B Calibration, Dated 04-19-2003
FNP-1-STP-227.22A, Surveillance Test Procedure Data Package, Main Steam Relief and Atmospheric Steam Dump Discharge Monitor N1D11Re0060C Calibration, Dated 04-19-2003
FNP-1-STP-227.23A, Surveillance Test Procedure Data Package, Auxiliary Feed Pump Turbine Exhaust Monitor N1D11RE0060D Calibration, Dated 04-21-2003
FNP-1-STP-227.14A, Surveillance Test Procedure Data Package, Condenser Air Ejector Gas Monitor N1D11RE0015 Channel Calibration, Dated 10-15-2003
FNP-1-STP-227.9A, Surveillance Test Procedure Data Package, Steam Generator Blowdown Liquid Monitor N1D11RE0023B Channel Calibration, Dated 08-18-2003

Design Basis Documents

Design Basis Document No. A-181000, Component Cooling Water System, Rev. 18
Design Basis Document No. A-181010, Auxiliary Feedwater System, Rev. 14
Design Basis Document No. A-181002, Residual Heat Removal System, Rev. 1
Design Basis Document No. A-181009, CVCS/High Head Safety Injection/Accumulators, Rev. 4
Design Basis Document No. A-181012, Instrument Air System (pages 2-1 thru 3-3), Rev. 3
Design Basis Document No. A-181001, Service Water System, Rev. 44
Document No. A-181004, Functional System Description Electrical Distribution System Farley Nuclear Plant Units 1 and 2 Southern Nuclear Operating Company Prepared by Bechtel Power Corporation, Revision 36
Calculation E-42, Job 23162, Steady State Diesel Generator Loading Calculation for LOSP, SI and SBO, Revision 17
A181987, Fuse Replacement Manual for Unit 1, And Unit 1 & Unit 2 Shared Safety Related Equipment, Revision 35 (Proprietary)
Georgia Power Research Center Project No. 92-076, Southern Company Services Farley Project Agastat Relay and ITE Contactor Performance Evaluation (Attachment to SE-91-1976-1, Revision 3)
Cutler-Hammer LITR01181, Dated April 26, 2001

UFSAR

UFSAR Section 5.5, Component and Subsystem Design (pages 22-35 and 46-47)
UFSAR Section 6.3, Emergency Core Cooling System (pages 1-37)
UFSAR Section 6.5, Auxiliary Feedwater System (pages 1-8a)
UFSAR Section 8.3, Onsite Power Systems (pages 1-5a)

UFSAR Section 9.2, Water Systems (pages 1-44)
UFSAR Section 9.3, Process Auxiliaries (pages 1-4)
UFSAR Section 10.3, Main Steam Supply System (pages 10-13)
UFSAR Section 11.4, Process and Effluent Radiological Monitoring Systems
UFSAR Section 15.4.3, Steam Generator Tube Rupture
UFSAR Section 15.4, Condition IV - Limiting Faults (pages 50-59)
UFSAR Table 7.5-1, Post Accident Instrumentation Type A variables

Drawings

2998-9184, Condensate Storage Tank Field Notes and Fittings, Rev. 3
72-4859, Condensate Storage Tank Unit #1 (Sheet 1), Rev. 2
72-4859, 8" Auxiliary Feedwater Pump Suction Nozzle Unit #1 (Sheet 13), Rev. 2
72-4860, 8" Auxiliary Feedwater Pump suction Nozzle Unit # 2 (Sheet 13), Rev. 1
72-4860, Condensate Storage Tank Unit #2 (Sheet 1), Rev. 2
72-4861, 16" Pump Suction Nozzle Unit #1 (Sheet 13), Rev. 4
72-4861, Refueling Water Storage Tank Unit #1 (Sheet 1), Rev. 6
72-4862, 6" Pump Suction Nozzle Unit #2 (Sheet 13), Rev. 2
72-4862, Refueling Water Storage Tank Unit #2 (Sheet 1), Rev. 2
7597-03, 2" Series Y-type Check Valve Class 1, Rev. F
78721, 6" Forged Bolted Cover Swing Check Valve, Rev. F
B-170058, Equipment Diagram - Refueling Water Storage Tank Q1F16T501 (Sheet 72), Rev. 4
B-170058, Equipment Diagram - Refueling Water Storage Tank Q1F16T501 (Sheet 72A), Rev. 2
D-170114, Main Steam System (Sheet 1), Rev. 32
D-170114, Main Steam System (Sheet 2), Rev. 22
D-170117, Condensate and Feedwater System (Sheet 2), Rev. 31
D-170117, Condensate and Feedwater System (Sheet 1), Rev. 36
D-170117, Condensate and Feedwater System (Sheet 3), Rev. 11
D-170119, Service Water System (Sheet 2), Rev. 43
D-170119, Service Water System (Sheet 3), Rev. 17
D-170119, Service Water System (Sheet 1), Rev. 33
D-175002, Component Cooling Water System (Sheet 1), Rev. 46
D-175002, Component Cooling Water System (Sheet 3), Rev. 13
D-175002, Component Cooling Water System (Sheet 2), Rev. 24
D-175007, Aux. Feedwater System, Rev. 26
D-175033, Main Steam and Auxiliary Steam System (Sheet 1), Rev. 33
D-175037, Reactor Coolant System (Sheet 2), Rev. 33
D-175037, Reactor Coolant System (Sheet 1), Rev. 25
D-175038, Safety Injection System (Sheet 1), Rev. 35
D-175038, Safety Injection System (Sheet 2), Rev. 20
D-175038, Safety Injection System (Sheet 1), Rev. 35
D-175039, Chemical and Volume Control System (Sheet 6), Rev. 4
D-175039, Chemical and Volume Control System (Sheet 2), Rev. 36
D-175063, Equip. Location-Aux & Control Bldg. Area Plans at 100’ & Below , Rev. 16

D-175203, Containment Floor & Equip. Drains - Sections & Details, Rev. 26
D-177001, Unit 1 Single Line - Electrical Auxiliary System (Emergency 4160V and 600V), Rev. 20
D-177052, Elementary Diagram of 575V Motor Operated Valve, Rev. 10
D-177558, Total Plant Numbering System, Rev. 34
D-177558, Total Plant Numbering System, Rev. 34
D-205063, Equip. Location-Aux & Control Bldg. Area Plans at 100' & Below, Rev. 13
D-205203, Containment Floor & Equip. Drains - Sections & Details, Rev. 13

Operating Experience Documents

SER 10-82
INPO SOER 93-1, Diagnosis and Mitigation of Reactor Coolant System Leakage Including Steam Generator Tube Ruptures, dated September 20, 1993
INPO Significant Event Notification (SEN) 97, "Steam Generator Tube Rapture," dated April 9, 1993
INPO SEN 237, "Common Mode Failure of All Charging Pumps, dated January 2, 2004
NRC Information Notice 93-56, "Weaknesses in Emergency Operating Procedures Found as Result of Steam Generator Tube Rupture," dated July 22, 1993
NRC Information Notice (IN) 2000-09, Steam Generator Tube Failure at Indian Point Unit 2
INPO SEN 213, Steam Generator Tube Failure, dated July 13, 2000, referencing a SGTR at Indian Point Unit 2 on February 15, 2000
W RR-ALA-79-68
NUREG-0909
SOER 82-12
NRC Information Notice 2003-06, Failure of Safety-Related Linestarter Relays at San Onofre Nuclear Generating Station
FNP-2003-082LIC, Response to file for NRC IN 2003-06
NRC Information Notice 93-76, Inadequate Control of Paint and Cleaners for Safety-Related Equipment

Miscellaneous Documents

7597-03-M35-37-4, Pacific Pumps Charging/Safety Injection Pump Operation and Maintenance Instructions
460002368, Operation& Maintenance of Y-Check Valves, Rev. 1
460001654, Operation& Maintenance of Y-Check Valves, Rev. 1
460003224, Maintenance and Repair Tool Manual (Kerotest), Rev. 0
VEL-HO-1, Instruction Manual of Velan Manual Operated Bolted Bonnet Gate, Globe, stop Check and check valves
FNP-00000002, Instructions Manual: Gate, Globe, and Check Valves
VEL-FBBM, Maintenance Manual of Velan 2-1/2" to 24" Bolted Bonnet Gate, Globe, and Bolted Cover Check valves
DCP-S00-1-9562, RWST Level Instrumentation, Scaling & Alarm Setpoint Changes, Rev. 2
U-277549, Instruction Manual HD Valves SS1102-36, Rev. 1

SNC Major Issues Status Report, December 15, 2003
U-176922, Instruction Manual - CCSI Pumps
NEL-99-0266, RWST Level Instrumentation Scaling & Setpoints
REA-98-1693, RWST Level Setpoints and Uncertainties
Condition Report No. 2003800303, Uncertainty calculation for RWST level instrumentation did not include density compensation to account for concentration of Boric Acid in solution (2400 ppm) in tank contents.
Radiation Management Services 10 CFR Part 21 Notification ( Initial Report), describing a potential for an incorrect radiation value to be displayed due to a non-catastrophic failure of the detector high voltage power supply in model 977-201 and 977-210 Wide Range Ion Chamber Area Monitors.
NRC Information Notice 91-75: Static Head Corrections Mistakenly Not Included In Pressure Transmitter Calibration Procedures, dated 11/25/1991.
NRC Information Notice No. 83-03: Calibration of Liquid level Instruments, dated 01/28/1983
Lesson Plan and Instructor Guide for OPS-52530D, EPP-3, Steam Generator Tube Rupture, dated July 30, 2001
Simulator Exam Scenario 2E-C, SGTR
Work-Around Lists for Units 1, 2 and Shared, dated November 29, 2003
List of Systems to Detect and Mitigate a SGTR Event, undated
RER transmittal 03-122-02, Sequencer Undervoltage Relays - STP Acceptance Criteria, dated January 23, 2004
NRC Problem Identification and Resolution Inspection Report 05000348/2003007 and 05000364/2003007
ITE Vendor Manual Section 6.2.6.1, Class A20 Non-Reversing A-C Starters
Safety-Related MCC Control Power Transformer Verification Status, Dated February 6, 2004

Corrective Work Orders

WO-557452, Research / Replace Undersized Unit 1 Motor Control Center (MCC) 1V Compartment S2 Control Power Transformer (CPT)

Completed Work Orders (WOs) and Work Requests (Wrs)

WO-W00690069, Perform FNP-0-EMP-1513.04 on TDAFWP Trip & Throttle Valve Q1N12MOV3406
WO-W00626531, Perform FNP-0-EMP-1513.04 on BIT Inlet Valve Q1E21MOV8803A
WO-W00690068, Perform FNP-0-EMP-1513.01 on MDAFW-to-1B SG ISO Valve Q1N23MOV3764D
WO-S99006386, Perform FNP-0-EMP-1513.01 on RWST-to-1A RHR Pump Valve Q1E11MOV8809A

Condition Reports resulting from this inspection

CR 2004000584 - The heat tracing power supply cable on Unit 1 CST level transmitters contained improper taping for a splice.
CR 2004000583 - Fuse Manual A181987 contains a misleading statement regarding it's applicability to other components.
CR 2004000589 - Determine the basis for the test criteria in procedure FNP-0-EMP-1513.01, ITE Magnetic Starters and Overload Relays and the reason for the performance of the test.
CR 2004000378 - Work order was written on incorrect sized transformer in MCC cubicle but need for a condition report was not identified. Determine why a CR was not written.
CR 2004000594 - Wrong sized CPT found in U MCC, cubicle FV-K3 toured on 2/12/04. Need to evaluate other MCCs to determine "broadness."
CR 2004000504 - There is no calculation to demonstrate that the emergency air compressors will supply their loads. Perform a calculation or otherwise demonstrate that the emergency air compressors are adequately sized.
CR 2004000602 - CR to address the material condition of the MOV control power contactors that caused the variance in the pick-up voltages of contactors as demonstrated by your EMP procedure.
CR 2004000586 - RP Survey points on the Unit 1 SG B atmospheric dump valve discharge line was missing. The point on the SG A atmospheric dump valve discharge line was partially obscured by dust and not easy to see.
CR 2004000587 - Unit 1 and 2 SJAE damper stem position indication does not appear to be appropriate. Also, the SJAE filter discharge throttle damper on both units has no label.
CR 2004000590 - Ensure that Information Notices 88-03 and 91-75 are revisited to ensure that level transmitters are density compensated.
CR 2004000377 - MCC cubicle FV–S2 contains a 200Va transformer instead of a 250 Va transformer as specified by the fuse manual. Verify correct sizing and evaluate operability.
RER 04-019-01, Evaluation of as-found configuration for Unit 1 Motor Control Center (MCC) 1V Compartment S2 CPT for operability

Work Requests Generated Due To This Inspection

WR 4001089, Broken plastic on manual plunger for motor starter contactor in MCC FV-R2

Components referenced in Section .24 - Testing and Inspection

Pumps
MDAFW 1A, 1B,
TDAFW P002;
HHSI P002A-A, 2B-B, 2C-B

Valve stroke times
MOV 8132A, B, (CVCS normal charging)
LCV-0115B, D (RWST to charging pumps suction valves)
1-8803A, B (HHSI discharge valves);
SG 1A, B, C (Atmospheric Relief Valves)),
Motor operated valve (MOV) torque and limit switch settings
MOV 8132A, B, (CVCS normal charging)
LCV-0115B, D (RWST to charging pumps suction valves)
1-8803A, B (HHSI discharge valves);

Check valve operation
MOV3350A, B, C (AFW stop check valves)
QV062A, B, C (HHSI discharge check valves)
Q1E11V051A, B, C (HHSI discharge check valves)
QV026 (HHSI discharge check valves);
Analysis of pump bearing oil and vibration
HHSI pumps - vibration and oil verification
AFW pumps - vibration only (oil was verified in a previous inspection)

Motor Operated Valve controllers
Q1E21MOV8803A BIT Inlet
Q1E21MOV8808B U1 B Accumulator Disch
Q1E11MOV8809A RWST To 1A RHR Pump
Q1N12MOV3406 TDAFW Trip/Throttle Valve
Q1N23MOV3764D MDAFWP to 1B SG Isolation

<u>Components referenced in Section .31 - Component Degradation</u>

Pumps
Motor Driven AFW 1A, 1B
Turbine Driven AFW P002
HHSI P002A-A, 2B-B, 2C-B

AOVs
Q1P16V577, 578, 579 (SW miniflow valves)
SG 1A, B, C (Atmospheric Relief Valves)
Q1N12HV3226 (Steam admission valve for TDAFW)
HV3227A,B,C (AFW flow control valves)

MOVs
MOV 3084A, B (SW supply to Aux. Bldg.)
MOV 8132A, B, (CVCS normal charging)
LCV-0115B, D (RWST to charging pumps suction valves)
1-8803A, B (HHSI discharge valves)

Manual Valves
- Q1P17V010A, B (CCW supply valve to Charging/HHSI pump coolers)
- QV290 thru 293 (CCW supply valve to Charging/HHSI pump coolers)

Check Valves
- MOV3350A, B, C (AFW stop check valves)
- QV062A, B, C (HHSI discharge check valves)
- Q1E11V051A, B, C (HHSI discharge check valves)
- QV026 (HHSI discharge check valves)