

January 27, 2003

Mr. Mark E. Warner
Site Vice President
FPL Energy Seabrook, LLC
Seabrook Station
c/o Mr. James M. Peschel
P.O. Box 300
Seabrook, NH 03874

SUBJECT: SEABROOK STATION - NRC INSPECTION REPORT 50-443/02-06

Dear Mr. Warner:

On December 28, 2002, the NRC completed an inspection at the Seabrook Station. The enclosed report documents the inspection findings which were discussed on January 10, 2003, with you and other members of your staff.

This inspection examined 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 license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. No significant findings were identified.

Since the terrorist attacks on September 11, 2002, the NRC has issued two Orders (dated February 25, 2002, and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the February 25th Order. The TI 2515/148 audit was completed at all commercial nuclear power plants during calendar year (CY) '02, and the remaining inspections are scheduled for completion in CY '03. Additionally, table-top security drills were conducted at several licensees to evaluate licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Safety and Incident Response. For CY '03, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and perform force-on-force exercises at selected power plants to pilot a long-term program that will test the adequacy of licensee security and safeguards strategies. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to contribute to the assurance of safety.

Mr. Mark E. Warner

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Sincerely,

/RA/

Brian J. McDermott, Chief
Projects Branch 6
Division of Reactor Projects

Docket No. 50-443
License No: NPF-86

Enclosure: NRC Inspection Report No. 50-443/02-06
Attachments: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-443

License No.: NPF-86

Report No.: 50-443/02-06

Licensee: FPL Energy Seabrook, LLC

Facility: Seabrook Station, Unit 1

Location: Post Office Box 300
Seabrook, New Hampshire 03874

Dates: September 29, 2002 to December 28, 2002

Inspectors: Glenn Dentel, Senior Resident Inspector
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Jason Jang, Senior Health Physicist
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Approved by: Brian J. McDermott, Chief
Projects Branch 6
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000443-02-06; FPL Energy Seabrook, LLC; on 09/29-12/28/2002; Seabrook Station, Unit 1. Resident Inspection Report.

The inspection was conducted by resident inspectors, a regional inspector providing assistance to the resident inspectors, a reactor engineer, a security specialist, two reactor inspectors, a senior operations engineer, and two health physics inspectors. This inspection identified no findings. 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. Inspector Identified Findings

No significant findings were identified.

B. Licensee Identified Violations

There were no violations identified by the licensee during this inspection.

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Report Details

SUMMARY OF PLANT STATUS:

The plant was operated at approximately 100 percent power for the duration of the inspection period. On October 9, a fire occurred in a non-safety related circulating water pump motor. This resulted in declaration of an Unusual Event. Safety related equipment was not affected and the plant remained at 100 percent power (See Sections 1R05, 1R14, 1R15, and 4OA3 for additional details).

1. REACTOR SAFETY **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

1R01 Adverse Weather Protection

.1 Cold Weather (Freeze Protection) Preparations

a. Inspection Scope

The inspectors reviewed Seabrook's preparation for cold weather relative to the protection of safety-related structures, systems, and components. This review included a walkdown of the condensate storage tank (CST) and the cooling tower (CT) switchgear and pump rooms to verify implementation of cold weather protection features to ensure continued operability during adverse weather. The inspectors verified that cold weather protection features in general and specifically associated with the CST and CT were identified in procedures and were adequate to ensure continued operability during cold weather. The inspectors reviewed the following documents:

- ON1059.01, "Heat Trace Operation," Rev. 4;
- ON1490.06, "Freeze Protection Control Surveillance," Rev. 2;
- Backlog Work Orders for Heat Tracing;
- Sections in the UFSAR including Table 9.2-3;
- IN1645.930 "Thermon Heat Trace Panel Calibration," Rev. 1;
- RTS 01RI02096002 "Heat Trace Control Panel CP-428 Calibration;"
- RTS 01RI02097002 "Heat Trace Control Panel CP-429 Calibration;"
- RTS 00RI06043001 "Heat Trace Control Panel CP-434 Calibration;"
- Seabrook System Description Document, Heat Tracing System, Rev. 0.

The inspectors reviewed deficiencies identified during the implementation of cold weather protection procedures, and verified these deficiencies were entered into the corrective action program.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors performed the following partial system walkdowns.

- On October 3, the inspectors performed a walkdown of the “A” high head safety injection train while the “B” train was isolated for inspection of valve CS-V-196.
- On October 21, the inspectors performed a walkdown of the four safety related batteries, battery chargers, and associated breakers while the “B” battery was removed from service to inspect and remove minor black discoloration on the battery posts.
- On November 25, the inspectors performed a walkdown of the “B” primary component cooling water (PCCW) train while the “A” emergency diesel generator (EDG) was out-of-service for maintenance. The “A” EDG provides emergency power to the “A” PCCW train.
- On December 10, the inspectors performed a walkdown of the “A” essential switchgear train while the “B” essential switchgear train ventilation system was out of service for scheduled preventive maintenance activities.
- On December 18, the inspectors performed a walkdown of the “B” service water (SW) system train while it was being supplied by the cooling tower pump to support a PCCW system flow balance test. In addition, the inspectors performed field walkdowns of the PCCW system, interviewed the system engineer and field operators, and observed portions of the flow balance test.

The inspectors reviewed the following documents to support the walkdowns and to verify proper system alignments:

- Piping and instrumentation drawings for the charging and PCCW systems;
- System health report for the charging and PCCW systems;
- OX1456.02, “Emergency Core Cooling System Status Verification Procedure,” Rev. 6;
- OS 1048.01, “125 VDC Vital System Operation OS,” Rev. 11;
- On-Line Maintenance Assessment Form for “B” battery removal;
- Tag Hang List for WW06-20-01 (“B” battery);
- 125VDC vital distribution system drawing;
- Technical Specification 3.8.3.1;
- OS1012.04, “Primary Component Cooling Water Loop B Operation,” Rev. 10;
- OS1212.01, “PCCW System Malfunction: Attachment C, Emergency Fill from Fire Protection System,” Rev. 8;
- WO 0218852 for “B” train essential switchgear return fan maintenance;
- OS1023.74, “Maintenance of Safety Related HVAC Systems-Compensatory Ventilation Procedure,” Rev.0;

- ES 02-01-42, "PCCW Train "B" Flow Rebalancing (DCR 00-019)," Rev. 0.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 "B" Circulating Water Pump Motor Fire

a. Inspection Scope

The inspectors evaluated Seabrook's fire brigade response to the October 9 circulating water (CW) pump motor fire (See Sections 1R14, 1R15, and 4OA3 for additional inspections on the fire). The inspectors performed several field inspections of the CW pumps room and adjacent areas, interviewed fire protection personnel and plant operators, and reviewed the applicable fire hazard analysis and the fire Protection Pre-Fire Strategies for the CW pump room. The inspectors verified that Seabrook's fire brigade personnel responded promptly to the event. The Town of Seabrook fire brigade was not required to respond. The fire remained confined to the non-safety related "B" CW pump motor and did not challenge any safety related systems, structures or components.

b. Findings

No findings of significance were identified.

.2 General Plant Areas Fire Protection

a. Inspection Scope

The inspectors examined several areas of the plant to assess: 1) the control of transient combustibles and ignition sources; 2) the operational status and material condition of the fire detection, fire suppression, and manual fire fighting equipment; 3) the general material condition of the passive fire protection features (fire doors, fire dampers, fire penetration seals, etc.); and 4) the compensatory measures for out-of-service or degraded fire protection equipment. The following areas were inspected:

- Non-Essential Switchgear and Mechanical Room-Control Building, 21'6" and 37'6" elevation;
- Emergency Feedwater Pump House, 27' elevation;
- Control Room, 75'0" elevation, and adjacent areas including the Technical Support Center, the Engineering Room, the Mechanical Room, the Kitchen area, and the Computer Room;
- Service Water Pump Room, 21'0" elevation;
- Cooling Tower Pump House, all elevations.

The inspectors reviewed the following documents:

- Fire Protection Pre-Fire Strategies;
- Fire Hazard Analysis;
- Compensatory List of Fire Protection Equipment out-of-service;
- Fire Protection Equipment Layout Drawings;
- Technical Requirements Manual, Sections TR-08, TR-11 and TR-12.

In addition, the inspectors evaluated Seabrook's actions to address questions identified in CR 02-15818 regarding operability criteria and surveillance testing of the main control room annunciator fire control panel CP-557. The inspectors verified that the panel was being properly maintained and that adequate compensatory measures were taken when the panel was out of service.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed Seabrook's flood protection program in regards to the safety related essential switchgear trains. The inspectors performed walkdowns of both trains to assess the condition of the internal and external flood protection barriers and procedures. Station drawings and other applicable documentation were used to verify that flood protection equipment and barriers were in good condition and installed in the field where required. The inspectors also reviewed several engineering evaluations, the applicable design basis document, condition reports, and the Updated Final Safety Analysis Report (UFSAR) to verify that the licensee had implemented measures to protect safety-related equipment from flooding events.

The following documents were reviewed:

- UFSAR Sections 9.3.3 and 9.3.4, "Equipment and Floor Drainage System;
- UFSAR Sections 3.4.1, "Flood Protection;"
- Design Basis Document, DBD-PB-01, "Plant Barriers," Rev. 1;
- Engineering Evaluation, SS-EE-97-002, Rev.00, "Plant Drainage System Guidelines;"
- Engineering Evaluation, 90-50, "Internal Flooding Potential Through Plant Drain and Sump Systems;"
- OS0243.02, "Fire Main Break," Rev. 8;
- OS1025.01, "Floor and Equipment Drain System Operation," Rev.10.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Quarterly Resident Inspector Review

a. Inspection Scope

On October 17, the inspectors observed operator training focusing on human performance of time critical tasks. The inspectors reviewed the operators ability to correctly evaluate the training scenario and implement the emergency plan. The inspectors also evaluated whether deficiencies were identified and discussed during critiques.

b. Findings

No findings of significance were identified

.2 Biennial Regional Specialist Review

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, Rev. 8, Supplement 1, "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure Attachment 71111.11B, "Licensed Operator Requalification Program," and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)," as acceptance criteria.

The inspectors reviewed documentation of operating history since the last requalification program inspection. Documents reviewed included NRC inspection reports, licensee event reports, and licensee deficiency reports. The inspectors did not detect operational events that were indicative of possible training deficiencies.

The operating tests for the week of December 1, 2002 were reviewed for quality and degree of difficulty.

The inspectors observed the dynamic simulator examinations and job performance measures (JPMs) being administered. These observations included facility evaluations of crew and individual performance during the dynamic simulator exam.

The inspectors observed simulator performance during the conduct of the examinations and reviewed performance testing and discrepancy reports to verify compliance with the requirements of 10 CFR 55.46 regarding simulator fidelity. The inspectors also verified that the simulator replicated the most recent core load for Seabrook station.

Instructors and training/operations management were interviewed for feedback regarding the implementation of the licensed operator requalification program.

On December 31, 2002, the inspectors conducted an in-office review of Seabrook's requalification exam results for the 2002 annual testing cycle. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination

Process (SDP).” (The comprehensive written exam was not administered this exam cycle.) The inspector verified that:

- Crew pass rate on the simulator test was greater than 80 percent. (Pass rate was 100.0 percent)
- Individual pass rate on the simulator test was greater than or equal to 80 percent. (Pass rate was 100.0 percent)
- Individual pass rate on the walk-through (JPMs) was greater than or equal to 80 percent. (Pass rate was 100.0 percent)

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors evaluated Maintenance Rule (MR) implementation for the primary component cooling water (PCCW) system. The inspectors reviewed the effectiveness of maintenance through the review of deficiencies identified, historical performance, and overall system performance. The following documents were reviewed:

- Last nine months of condition reports for PCCW, selected items were reviewed in greater detail;
- MR scoping document and MR performance criteria;
- PCCW System Health Report;
- PEG-10 System Walkdown Reports for PCCW;
- MR performance data including maintenance rule function failures (MRFFs) and unavailability data.

Based on issues identified in the review of above documents, the inspectors assessed: 1) the application for MR scoping and MR reliability/availability performance criteria; 2) the corrective actions for deficient conditions; 3) the extent of condition reviews for common cause issues; and 4) the contribution of deficient work controls or work practices to any degraded conditions.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the scheduling and control of maintenance activities in order to evaluate the effect on plant risk. The inspectors reviewed the routine planned maintenance and emergent work for the following equipment removed from service.

- On October 3, the inspectors reviewed the risk associated with maintenance technicians and engineers inspections of the “A” emergency diesel generator (EDG) rectifier. The inspections were performed as part of the extent of condition review for an issue previously identified (July 26, 2002) in the “B” EDG rectifier. The inspectors observed portions of the work activities, interviewed personnel, verified the proper use of procedures, and reviewed the associated on-line maintenance assessment and work order (WO-0229033).
- On October 28, the inspectors reviewed the risk associated with the partial drain down (lowering) of the spent fuel pool (SFP) level to support repairs and removal of the SFP skimmers and associated equalizing lines. The inspectors reviewed operating procedure OS 02-01-02, “SF Pool Draindown In Support of MSE 02-0271,” Revision 0, performed field walkdowns, and interviewed plant operators to assess the capability of the SFP to perform its intended function.
- On November 1, the inspectors reviewed operators’ response to a spurious electrical ground that caused a negative rate trip input on nuclear instrumentation channel NI-42. A second input would result in a reactor trip. The inspectors examined the immediate actions to reduce risk and the system engineer’s evaluation of the potential risk associated with the spurious ground. Additionally, the inspectors reviewed the risk of a temporary alteration used to monitor for the spurious ground (see Section 1R23).
- On November 7 and 8, the inspectors reviewed the risk associated with a degraded emergency diesel generator (EDG) jacket water keep warm pump. Operators identified the pump was degrading and corrective actions were taken to replace the pump on November 8. The inspectors reviewed the licensing and design basis for the pump and examined the operator’s determination that the EDG would remain functional with a low jacket water temperature.
- The inspectors reviewed the risk associated with three separate unexpected trips of the “B” instrument air compressor (SA-SKD-137B). The compressor tripped on main motor overload on November 20, 22 and 24. The inspectors reviewed the licensing and design basis for the compressors and the engineering evaluation and corrective actions documented in CR 02-15871 and in the plant engineering action plan register. In addition, the inspectors performed field walkdowns and interviewed operators and the system engineer to assess the capability of the instrument air system to perform its intended function.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

"B" Circulating Water Pump Motor Fire

a. Inspection Scope

The inspectors reviewed the response of operations and security personnel to the "B" circulating water (CW) pump motor fire that occurred on October 9. The inspectors reviewed the emergency plan response to the Unusual Event and CR 02-0401 which documented an emergency preparedness self assessment on the emergency plan response. The inspectors' review of the Seabrook fire brigade response is documented in Section 1R05 of this report.

The fire started in the non-safety related "B" CW pump motor casing. The inspectors verified that security personnel provided prompt control over the CW pump house and assistance in the evaluation of the cause of the fire. In addition, the inspectors confirmed that the operators properly classified the event in accordance with emergency action level procedure and that a timely notification to state and local governments and the NRC were made as required in 10 CFR 50.72. The sequence of events and basis for the emergency declaration was described in section 4OA3.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed several operability determinations (OD's) and/or equipment degraded conditions, in order to verify that the identified conditions did not adversely affect safety system operability or plant safety. In addition, where a component was determined to be inoperable, the inspectors verified the Technical Specification (TS) limiting condition for operation implications were properly addressed. The inspectors performed field walkdowns, interviewed personnel, and reviewed the following items:

- On October 3 thru November 1, the inspectors reviewed packing leaks and boric acid buildup on several safety related or important to safety valves to ensure that operability of the valves was not affected. The valves inspected included, a charging system flow control valve CS-FCV-121, and the reactor coolant pump seal injection isolation valves CS-V-154, 158, 162 and 167. The inspectors performed field walkdowns inside and outside containment, interviewed applicable system engineers and health physics personnel, and reviewed the boric acid cleanup list. In addition, the inspectors reviewed procedures EX1801.002, "Leakage Reduction Program Surveillance," Rev. 8, and EX1801.006, "Containment Leakage Reduction Program Surveillance," Rev. 6, to ensure that procedural requirements were being implemented. The inspectors also verified that there was no degradation or corrosion of the metal components. The inspectors concentrated the review on carbon steel components with indications of discoloration.

- On October 9, during the “B” circulating water pump motor fire, the plant experienced multiple radiation monitors’ alarms immediately after the “B” CW pump tripped. There are approximately 80 process and effluent radiation monitors installed at Seabrook to continuously monitor (measure, record, alarm) and/or sample process and effluents stream during normal and accident plant conditions. A total of eight radiation monitors alarmed during the “B” CW pump fire. The alarming monitors included: the radiological control area ventilation exhaust airborne radiation monitor RM-6522, the waste processing building (WPB) ventilation exhaust airborne radiation monitor RM-6531, the primary auxiliary building exhaust vent airborne radiation monitor RM-6532, and the steam generators blowdown (SGBD) liquid sample process radiation monitors RM-6510, 6511, 6512, 6513, and 6519. The inspectors reviewed CR 02-14389 which evaluated the cause for the multiple radiation alarms. Seabrook determined that the SGBD system isolated as expected based on the lineup at the time, resulting in the multiple SGBD radiation monitor alarms due to low process flow (RM-6510, 6511, 6512, 6513, and 6519). In addition, Seabrook determined that the remaining radiation monitors alarms (RM-6522, 6531, 6532) were due to an instantaneous spike caused by voltage fluctuations generated when the “B” CW pump tripped, since the pump and the affected radiation monitors are powered from the same electrical Bus (Bus 2). The inspectors verified that these monitors reset within one to two seconds and remained available to perform their intended function.

The inspectors interviewed operations, health physics and engineering personnel and performed visual inspections/walkdowns of the affected radiation monitors and several other radiation monitors. In addition, the inspectors reviewed historical radiation data to verify that no abnormal radiation conditions existed prior to and/or after the event, and to verify that there were no abnormal radiation releases to the environment. The inspectors also verified that applicable backup radiation monitors remained available and operational during the event.

- On October 17, during a scheduled surveillance run infrared thermography testing identified an unusual hot electrical connection in the generator brushes for the "B" emergency diesel generator (EDG). The hot connection was at the barrel to wire (crimp) location. Continued monitoring during the surveillance run indicated a temperature of approximately 146 degrees above a similar field connection, and was classified as “critical” based on the temperature deviation from normal per the Seabrook thermography program guidance. The “B” EDG was declared inoperable for inspections and repairs. The inspectors reviewed the operability and reportability determinations associated with this deficiency documented in CR 02-14528, and verified that the “B” EDG safety function was not affected. In addition, the inspectors verified that an adequate extent of condition review was performed for both EDG’s. Engineering Procedure ES1807.016, “Thermography Program,” Administrative Procedure OE 4.5, “Operability Determination,” and Generic Letter 91-18, “Resolution of Degraded And Nonconforming Conditions” were used to evaluate the licensee’s operability determination. 10 Code of Federal Regulations (CFR) 50.72, "Immediate notification requirements for operating nuclear power reactors," 10 CFR 50.73,

"License Event Report System," and NUREG 1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" were used to review the reportability determination.

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed Seabrook's current listing of operator work-arounds and operator impact items. The inspectors examined the Operations Administrative Instruction OAI.20 "Operations Work-arounds and Operational Impact Items," Rev. 16 and verified that this procedure provided the necessary guidance to the licensee to adequately address the cumulative effects these work-arounds had on the operation, reliability, and availability of affected systems. The inspectors also reviewed selected CRs and the items were verified to be properly tracked and scheduled for completion of corrective actions based on the priority and impact on the plant. The inspectors evaluated whether the work-arounds adversely impacted the ability of the operators to implement emergency procedures or respond to plant transients.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors observed portions of the post-maintenance test activities (PMTs), and reviewed applicable on-line maintenance assessment form, to ensure: 1) the PMT was appropriate for the scope of the maintenance work completed; 2) the acceptance criteria were clear and demonstrated operability of the component; and 3) the PMT was performed in accordance with procedures. The following PMTs were reviewed:

- On October 3, OX1456.81, "Operability Testing Of IST Valves," Rev. 5, following completion of the starter inspection for the "A" charging pump minimum flow circulation valve CS-V-196.
- On November 8, OX1426.01, "DG 1A Monthly Operability Surveillance," Rev. 8, following replacement of the jacket water keep warm pump (1 DG-P-120A). In addition, the inspectors observed portions of the work activities, performed several field walkdowns of the "A" EDG, reviewed work order WO 0240007 and verified that proper refilling and venting of the cooling lines was performed per procedure MS0539.28, "Emergency Diesel Generator Coolant Recirculation, Filtering, Draining And Refilling," Rev. 2.

- On November 14, OX1426.05, “DG 1B Monthly Operability Surveillance,” Rev. 8, following completion of several scheduled corrective and preventive maintenance activities including; corrective maintenance to repair a crank shaft seal leak, calibration of the jacket cooling water pressure switches, and replacement of filters. The inspectors observed portions of the work activities, and performed several field walkdowns of the “B” EDG. In addition, the inspectors reviewed CR 02-15671 which documented an inadvertent start of the “B” EDG jacket water auxiliary cooling pump upon EDG start for testing.
- On November 15, OX1456.81, “Operability Testing of IST Valves,” Rev. 5 and OX1420.04, “Main Steam System Valve Operability,” Rev. 3, following replacement and inspection of the solenoid operated control valves. The inspectors observed portions of the work activities (WO 0207532, 0207535, and 0219440 and procedure IS0603.005, “Equipment Qualification for ASCO Solenoid Valves,” Rev. 4), examined the planned PMT, and interviewed the maintenance technicians and the inservice test supervisor.
- On November 25, OX1426.01, “DG 1A Monthly Operability Surveillance,” Rev. 8, following completion of several scheduled corrective and preventive maintenance activities including; corrective maintenance for replacement of a hot wire connection associated with panel CP-75B, repair of the engine driven fuel oil pump for an inboard top cap leak, and calibration of various instruments. In addition, the inspectors observed portions of the work activities, performed several field walkdowns of the “A” EDG, reviewed work orders WO 0238985, 0232297, 0218737, 0231197, and verified that venting of the fuel oil lines was performed per the fill and vent procedure MS0539.55, “DG A Post-Maintenance Fuel Oil System Filling, Venting, And Leak testing,” Rev. 0.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of several surveillance testing activities of safety related systems to verify that the system and components were capable of performing their intended safety function, to verify operational readiness, and to ensure compliance with required TSs and surveillance procedures.

The inspectors attended some of the pre-evolution briefings (as applicable), performed system and control room walkdowns inside and outside containment, observed operators and technicians perform test evolutions, reviewed system parameters, and interviewed the system engineers and field operators. The following surveillance procedures were reviewed.

- On October 29, OX1413.01, "A Train RHR Quarterly Flow and Valve Stroke Test and 18 Month Valve Stroke Observation," Rev. 9. In addition, the inspectors reviewed applicable work orders 0221368 and 0209713.
- On November 7, OX1456.02, "ECCS Monthly System Verification," Rev. 6. The inspectors reviewed Seabrook's programs and procedures used to detect and correct unwanted air voids in emergency core cooling system (ECCS) piping. In addition, the inspectors verified that Seabrook is not susceptible to a pipe slope problem identified at another nuclear facility in August 24, 2002, which resulted in an undetected air void that could have impacted the performance of the high head safety injection pumps. The inspectors verified that at Seabrook, the points selected to perform ultrasonic testing for detection of possible air voids were at the highest or most susceptible area for air voids accumulation, and verified that there were no gross pipe slopes which may result in undetected air voids. The inspectors performed walkdowns of accessible ECCS inspection points inside and outside containment, reviewed the associated procedure (OX1456.02), observed a sample of ultrasonic testing activities, interviewed applicable system and design engineers, and reviewed engineering evaluation SS-EV-980002, "Evaluation Of ECCS High Points," Rev.1.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed temporary alteration No. 0239506 and associated implementing documents to verify Seabrook's design basis and affected system/component operability were maintained. The temporary alteration involved use of equipment to monitor an intermittent ground for the "B" electrical distribution panel. The "B" panel supplies power to multiple channel II instrumentation control panels and recorders. Channel II is one of the four safety instrumentation channels.

The inspectors interviewed engineers and operators, completed field walkdowns, and reviewed the following documents:

- Maintenance Manual, MA 4.3A, "Temporary Modifications and Temporary Alterations," Rev. 16;
- WO 0239506, Troubleshooting Power Panel 1B for Source of Ground and Correct;
- Engineering evaluation titled "Impact of a Ground on PP-1B during Plant Operation";
- Plant Engineering Action Plan Register - PP-1B intermittent ground alarm.

The inspectors verified appropriate controls in accordance with NRC requirements and plant procedures were completed for the temporary alteration. These controls included tagging on plant equipment affected by temporary alteration and procedural changes.

The inspectors verified 10 CFR 50.59 reviews and 10 CFR 50.65 (a) (4) risk evaluations were completed correctly. The inspectors also examined the combined effect of the alteration with the other outstanding temporary alterations.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Scope

During the period November 18 to 21, the inspectors conducted the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation, and the adequacy of the respiratory protection program for issuing self-contained breathing apparatus to emergency response personnel. Implementation of these programs was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and Seabrook's procedures.

- The inspectors observed technicians performing radioactive source and functional checks on a variety of instruments including the whole body counters (WBC Nos. 1 & 2), contamination monitors (SAM Nos. 9A & 48, CM-7 Nos. 475 & 456), low range/high range portable survey instruments (RO-20 No. 2846, RSO-5 No. B176B, ASP-2 No. 990, Teletector No. 2043) and personnel contamination monitors (IPM 7 & 8, SPM-906).
- The inspectors reviewed the calibration records for selected survey instruments including an RO-20 & RSO-5, a portal contamination monitor (SPM-906), a small article monitor (SAM-9), electronic dosimeters (DMC-2000) and a personnel contamination monitor (IPM-8). Additionally, the quality assurance quarterly testing data for the whole body counters (Nos. 1 & 2) was reviewed for the first and second quarters of 2002.
- The inspectors reviewed the operating procedure and current source activity/dose rate characterizations for the Shepard Model 81 beam irradiator, used for instrument calibrations, and observed a technician perform safety interlock testing on the irradiator.
- The inspectors evaluated the adequacy of the respiratory protection program regarding the maintenance and issuance of self-contained breathing apparatus (SCBA) to emergency response personnel. Training and qualification records were reviewed for three licensed operators from each of the six operating shifts and for three health physics technicians, who would be required to wear SCBA's in the event of an emergency. Three (3) SCBA's staged for use in the control room and one SCBA staged on the turbine deck were physically checked and

the maintenance and hydrostatic test records for other selected SCBA's, staged in other plant areas, were reviewed.

b. Findings

No findings of significance were identified

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

.1 Occupation Exposure Control Effectiveness

a. Scope

The inspectors reviewed implementation of Seabrook's Occupational Exposure Control Effectiveness Performance Indicator (PI) program. Specifically, the inspectors reviewed Condition Reports, and associated documents, for occurrences involving locked high radiation areas, very high radiation areas, and unplanned personnel exposures, since May 2002. The inspectors used the criteria specified in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2, to verify that all occurrences that met the NEI criteria were identified and reported as Performance Indicators.

b. Findings

No findings of significance were identified.

.2 RETS/ODCM Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed the following documents to ensure that Seabrook met all requirements of the performance indicator from the second quarter 2001 to the third quarter 2002 (six quarters):

- monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- year 2002 condition reports and corrective actions; and
- associated procedures.

The inspectors also performed an independent verification of Seabrook's capability for calculating projected doses (Method I and Method II) to the public resulting from discharges of radioactive liquid, gases, and particulate using Seabrook's meteorological monitoring data. Seabrook used its computer code for radioactive gas releases. The NRC used the NRC PC-DOSE computer code. The comparison results were evaluated.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Radiation Monitoring and Respiratory Protection Programs

a. Scope

The inspectors reviewed selected Condition Reports, Health Physics Department Self-Assessments, Quality Assurance Surveillance Reports (QASR)/ audit, and Radiation Detection/Monitoring System (RDMS) steering committee meeting minutes to evaluate Seabrook's threshold for identifying, evaluating, and resolving problems in implementing the radiation monitoring and respiratory protection programs. Included in this review were seventeen (17) CR's, two (2) departmental self-assessments, seven (7) QASR's, a Nuclear Oversight audit report, and RDMS committee meeting (Nos.02-01 & 02-02) minutes. This review was conducted against the criteria contained in 10 CFR 20, Technical Specifications, and Seabrook's procedures.

b. Findings

No findings of significance were identified

.2 345 KV Off-site Power Line Trip

a. Inspection Scope

The inspectors selected condition report (CR) 02-05389 as a Problem Identification and Resolution sample for detailed review. This CR identified that on April 19, 2002, a fault occurred on the "A" phase of the Newington 345 KV off-site power line causing the line to trip. Subsequent to the Newington line trip, the Scobie line tripped. The Scobie line was returned to service approximately two minutes after it tripped. The inspectors reviewed this CR to ensure that the full extent of these issues was identified, that appropriate evaluations were performed, that appropriate extent of condition reviews were performed, and that appropriate corrective actions were specified and prioritized. For corrective actions not completed, the inspectors verified an appropriate plan was in place to resolve the issue. The inspectors also reviewed selected work orders (WO) to verify short term corrective actions were implemented prior to returning the 345 KV system to service.

The inspectors reviewed the corrective actions which included, replacing the Newington line "A" phase lightning arrester, performing inspections of the lightning arresters on the remaining lines and phases and replacing the filtering card on the Scobie line to determine their effectiveness.

The inspectors reviewed 345 KV switch yard system performance reports to determine the current status of the 345 KV system. The system performance report assigns a color for system health status and trends progress for improvement.

The inspectors toured the 345 KV relay room and the 345 KV switch yard to assess the material condition of the system and its components. Additionally, the inspectors interviewed systems and design engineering personnel to determine their familiarity with the issues inspected and to gain insights to how the issues were and would be resolved.

b. Findings

No findings of significance were identified.

The inspectors found that the corrective actions associated with the reviewed CR were appropriate and should reasonably prevent recurrence of the problem. The root cause evaluation was detailed and thorough. Seabrook appropriately conducted extent of condition reviews and generic reviews for the identified issues. Subsequent to implementing short term corrective actions Seabrook had replaced the Scobie off-site power line with new lightning arresters. Seabrook had plans in place to replace the Newington and Tewksbury lightning arresters.

The inspectors noted that previous maintenance practices may not have considered the potential of the lightning arrester "O" ring to fall into the lightning arrester during maintenance on the 345 KV system. Additionally, the inspectors noted Seabrook changed its vendor for sulfur hexafluoride (SF₆) gas sampling. Seabrook determined that the vendor may have had poor sample handling practices in place which resulted in the loss of a scheduled SF₆ gas sample. The loss of the gas sample contributed to Seabrook's inability to perform an appropriate analysis prior to the lightning arrester failure, and to predict this failure before it occurred.

4OA3 Event Follow-Up

.1 "B" Circulating Water Pump Motor Fire

a. Inspection Scope

On October 9, a fire occurred in the non-safety related "B" circulating water (CW) pump motor. Seabrook station was operating at 100 percent power and the "B" CW pump had been returned to service following normal preventive maintenance. The pump tripped unexpectedly after two hours and 24 minutes of operating time. The operators declared an Unusual Event based on the fire lasting for more than ten minutes inside the plant protected area. Although the flames self extinguished rapidly, the smoke/overheating condition lasted for approximately two and a half hours. The fire remained confined to the non-safety related "B" CW pump motor and no safety related system structure or component were affected. The inspectors review of the Seabrook fire brigade and plant personnel in response to the fire, and the impact on radiation monitors, are documented in Sections 1R05, 1R14, and 1R15 of this report.

The inspectors performed control room walkdowns, observed plant status and performance of equipment by reviewing parameters and indicating instrumentation, including mitigating systems/trains and fission product barriers, and evaluated alarm conditions generated during the event.

Seabrook's root cause evaluation (CR 02-14255) determined that an instantaneous overcurrent and ground fault occurred in the "B" CW pump motor, resulting in a flash to ground which initiated a fire within the motor casing. The instantaneous overcurrent and ground fault was caused by aging failure of the electrical insulation in the area of the upper motor winding. The instantaneous flush resulted in a fire due to combustible sound proof insulating material which may have come loose from the roof of the motor casing and was introduced into the motor winding area. The inspectors reviewed the root cause evaluation and verified that adequate corrective actions were implemented.

b. Findings

No findings of significance were identified.

- .2 (Closed) URI 50-443/01-08-02: Emergency AC Power (Emergency Diesel Generators) System Unavailability Performance Indication - Evaluating the "B" EDG failure fault exposure time.

The licensee submitted a correction to the emergency AC power system unavailability to account for the October 2000 failure of the "B" EDG. This unresolved item was completed following NRC headquarters review of the internally submitted feedback form. The inspectors verified the accuracy of the hours included in the correction through review of system engineering logs and comparison with the NRC assessment documented in NRC Inspection Report 50-443/2000-11. The additional hours did not result in crossing the green/white threshold for the performance indicator. Therefore, the failure to account for the fault exposure time was of minor significance. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section VI of the NRC's Enforcement Policy.

- .3 (Closed) URI 50-443/02-10-02: Review of Seabrook's Root Cause Evaluation and Results of "B" EDG Rectifier Bank Failure Determination.

This unresolved item was identified during a special team inspection completed on August 2, 2002, in response to an emergency diesel generator (EDG) rectifier bank failure at Seabrook. The inspection results were documented in NRC Inspection Report 50-443/02-010.

On July 24, 2002, the "B" EDG experienced a high kVAR fluctuation during a monthly surveillance testing. Approximately three hours after the "B" EDG was fully loaded with 5900 KW, the reactive load began to oscillate with a magnitude of 1200 to 1500 kVAR (peak to peak), and the field voltage oscillated between 200 and 300 Vdc. The "B" EDG was shutdown and declared inoperable for investigation and troubleshooting (CR 02-11586).

The initial troubleshooting indicated that the kVAR fluctuation was caused by the malfunction of rectifier chassis 1 and the associated selector switch and interconnecting wiring. In addition, thermography testing of the local control panel circuitry performed while the "B" EDG was loaded identified two unusual hot connections, one on a termination (a crimp barrel) of an electrical cable connection and the other on a termination cable near the rectifier bank selector switch.

Seabrook established an apparent cause team, consisting of eight team members, to evaluate the condition and to determine applicable corrective actions. Laboratory analysis of the failed rectifier and its associated selector switch, determined that the most probable cause for the "B" EDG kVAR fluctuation was a loose bus bar electrical connection (bolt and nut less than finger tight), leading to a mis-operation of the connected silicon controlled rectifier (SCR). The apparent cause team concluded that the affected electrical connection may not have been properly tightened during refurbishment activities completed in 1994. Heating and cooling of the connection by electric current during diesel runs could have caused the looseness of the connection to become more severe. In addition, the apparent cause team concluded that the two hot connections identified during thermography testing did not contribute to the event.

The inspectors reviewed Seabrook's team evaluation and interviewed three team members by telephone. The inspectors also verified that an adequate extent of condition review was performed for both EDG's, and concluded that there were no performance issues or violations associated with the July 24, 2002, EDG rectifier bank failure. This item is closed.

.4 (Closed) LER 50-443/02-01: Reactor Trip due to a Digital Rod Position Indication Card Failure.

On May 28, 2002 with the unit in hot shutdown (Mode 4), operators initiated a manual reactor trip due to the loss of indication for one control rod during control rod surveillance testing. The inspectors reviewed the accuracy of the licensee event report, examined the effectiveness of the corrective actions described in CR 02-09092, and verified compliance with the reportability requirements. The inspectors did not identify any findings of significance or violations of NRC requirements.

.5 (Closed) LER 50-443/02-02: Non-Compliance with the Requirements of Technical Specification 3.8.1.1 action b.

On July 24, 2002, the "B" emergency diesel generator (EDG) experienced a high kVAR fluctuation during surveillance testing. The "B" EDG was declared inoperable for trouble shooting and repairs. Operators subsequently failed to meet the requirements of TS 3.8.1.1 action b to test or to determine the common cause of the issue to the "A" EDG. This issue was previously reviewed and documented in NRC Inspection Report 50-443/02-010 as a non-cited violation with very low safety significance (Green finding). The inspectors reviewed the accuracy of the licensee event report, examined the effectiveness of the corrective actions described in CR 02-11795, and verified compliance with the reportability requirements. No additional findings of significance were identified.

4OA5 Other Activities

.1 Review of Plant Security Interim Compensatory Measures

a. Inspection Scope

An audit of Seabrook's performance of the interim compensatory measures imposed by the NRC's Order Modifying License, issued February 25, 2002 was completed in accordance with the specifications of NRC Inspection Manual Temporary Instruction (TI) 2515/148, Revision 1, Appendix A, dated September 13, 2002.

b. Findings

No findings of significance were identified.

.2 Station Blackout (SBO) Power Supply Adequacy

a. Inspection Scope

The inspectors reviewed aspects of Seabrook Station's station blackout (SBO) capability. This review included a Seabrook Station SBO evaluation, an NRC safety evaluation, the updated final safety evaluation (UFSAR), the technical specifications and an emergency operations procedure for loss all alternating current (AC) power. The review was conducted to determine if the SBO capability of Seabrook Station met its design and licensing basis. Additionally, the inspectors reviewed plans and held discussions with the engineering director and project engineer regarding an initiative to install an additional emergency diesel generator (EDG) system to enhance on-site AC capability. Seabrook had formalized, approved and staffed the initiative to evaluate adding an additional source of AC power to the emergency buses.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Mark E. Warner on January 10, 2003, following the conclusion of the period. The licensee acknowledged the findings presented. The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

.2 Site Management Visit

On November 18 and 19, Mr. Brian McDermott, Chief, Reactor Projects Branch 6, toured the site and met with Mr. Mark Warner and other members of Seabrook management.

**ATTACHMENT 1
SUPPLEMENTAL INFORMATION**

a. Key Points of Contact

Licensee:

G. StPierre, Station Director
 B. Plummer, Operations Manager
 T. Nichols, Technical Support Manager
 D. Sherwin, Maintenance Manager
 J. Pandolfo, Security Manager
 M. O'Keefe, Regulatory Compliance Supervisor
 D. Boss, Respiratory Protection Technician
 B. Clark, Radiological Services Supervisor
 W. Cash, Health Physics Department Manager
 D. Chorlian, Radiation Technician, Instrument Calibration Facility
 C. Ellis, Senior Health Physics Technician
 D. Flahardy, Senior Health Physicist
 G. Kotkowski, Design Engineering
 W. Leland, Manager Chemistry/Health Physics
 R. Thurlow, Health Physics Technical Supervisor
 R. Hickok, Licensing
 T. Cassidy, Supervisor Simulator Support
 T. Manning, Systems Engineering
 E. Spader, Supervisor LOR Training
 T. Manning, Systems Engineering
 J. Vargas, Engineering Director

b. Items Opened, Closed, and Discussed

Opened and Closed: None

Closed:

50-443/02-01	LER	Reactor Trip due to a Digital Rod Position Indication Card Failure (Section 4OA3).
50-443/02-02	LER	Non-Compliance with the Requirements of Technical Specification 3.8.1.1 action b (Section 4OA3).
50-443/01-08-02	URI	Emergency AC Power (Emergency Diesel Generators) System Unavailability Performance Indication - Evaluating the "B" EDG failure fault exposure time (Section 4OA2).
50-443/02-10-02	URI	Review of Seabrook's Root Cause Evaluation and Results of "B" EDG Rectifier Bank Failure Determination (Section 4OA3).

c. List of Acronyms Used

AC	Alternating Current
CFR	Code of Federal Regulations
CR	Condition Report
CS	Charging System
CST	Condensate Storage Tank
CT	Cooling Tower
CW	Circulating Water
DBT	Design-Basis Threat
EDG	Emergency Diesel Generator
ECCS	Emergency Core Cooling System
EFW	Emergency Feedwater
IR	Inspection Report
FPL	Florida Power & Light
JPM	Job Performance Measures
KV	Kilovolt
KVAR	Kilovolt Amps Reactive
LER	Licensee Event Report
MR	Maintenance Rule
MMOD	Minor Modification
MRFF	Maintenance Rule Function Failures
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	Operability Determination
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PCCW	Primary Component Cooling Water
PI	Performance Indicator
PMT	Post Maintenance Test
QASR	Quality Assurance Surveillance Reports
RCS	Reactor Coolant System
RDMS	Radiation Detection and Monitoring System
RETS	Radiological Effluent Technical Specification
RM	Radiation Monitor
SAM	Small Article Monitor
SER	Safety Evaluation Report
SBO	Station Blackout
SCR	Silicon Controlled Rectifier
SDP	Significance Determination Process
SCBA	Self-Contained Breathing Apparatus
SFP	Spent Fuel Pool
SF	Sulfur Hexafluoride
SGBD	Steam Generators Blowdown
SI	Safety Injection
SSC	Structure, System, or Component
SW	Service Water
TI	Temporary Instruction
UFSAR	Updated Final Safety Analysis Report

URI	Unresolved Item
WBC	Whole Body Counters
WO	Work Order

d. Partial List Of Documents Reviewed

Procedures

ECA-0.0	Loss of All AC Power, Rev.27
HD0955.05, Rev 12/08	Operation of Portable Radiation & Contamination Survey Instruments
HD0955.19, Rev 07/00	Use of the Model 81 Shepard Beam Irradiator
HD0955.31, Rev 03/01	Determination of Portable Instrument Response Check Data
HD0955.54, Rev 00/03	Operation of the TSA Model SPM-906 Portal Monitor
HD0958.03, Rev 23/04	Personnel Survey & Decontamination Techniques
HD0961.31, Rev 01/06	Canberra Whole Body Counting System Operation
HD0961.32, Rev 00/03	Canberra Whole Body Counting System Calibration
HD0963.28 Rev 08/02	Calibration and Troubleshooting of Merlin Gerin DMC 2000 Dosimeters
HD0963.31, Rev 06/00	Calibration of the Eberline RM-14 & RM-20 Radiation Monitors
HD 0963.02, Rev 13/07	Administrative Guidelines For Health Physics Instrumentation
HD0963.33, Rev 05/00	Calibration of Eberline Model E-520 Geiger Counter
HD0963.37, Rev 04/00	Calibration of the E-520E Geiger Counter
HD0963.45, Rev 00/06	Calibration of AMS-4
HD0963.46, Rev 00/05	Calibration of the TSA Model SPM-906 Portal Monitor
HD0965.01, Rev 15/04	Respiratory Protection Quality Assurance and Maintenance Program
HD0965.02, Rev 14/07	Repair, Inspection, & Maintenance of Respiratory Equipment
HD0992.02, Rev28/03	Issuance and Control of Personnel Monitoring Devices
LN 0561.09	Addition of SF6 Gas to Gas Circuit Breaker & Gas Insulated Bus Duct Zones 1-7
LN 0561.18	345 KV Gas Insulated Bus Duct Repair, Rev. 0
LN 0561.19	345 KV SF6 Bus Duct Repair Retest, Rev. 2
MA 3.4	Foreign Material Exclusion, Rev. 10

Reports:

- Job Performance Measure #GT1073, Self-Contained Breathing Apparatus
- General Training Program, Lesson Plan No. GT1073C, Self-Contained Breathing Apparatus
- General Training Program, Student Handout, GT1073C, Self-Contained Breathing Apparatus

- Radiation Data Monitoring System Steering Committee Meeting Minutes (02-01 & 02-02)
- HPSTID 01-010 (Health Physics Study/Technical Information Document), Beam Irradiator Verification and Characterization of new planar positions
- First & Second Quarterly (2002) Whole Body Counter Results for the Collaborative Quality Assurance Program
- Nuclear Oversight Audit Report No. 02-A01-01, Radiation Protection
- Self-Assessment No. 01-0128, Periodic Review of Health Physics Instruments
- Self-Assessment No. 02-0081, Bi-annual Condition Report Trend Analysis January-June 2002
- Breathing Air Quality Sample Analyses
- Framatome, Semi-Annual Quality Assurance Status Report (January - June 2002, Dosimetry Services (Panasonic 808/814 TLS's)

Licensing Documents:

- Seabrook Station Updated Final Safety Analysis report
- Seabrook Station Technical Specifications

Miscellaneous Documents:

- General Electric Vendor Manual, Printed Circuit Cards for MOD III Static Relay equipment
- OhionBrass Company Vendor Manual, Thorex Dynagap 5 Station Class Surge Arresters
- Letter to New Hampshire Yankee, 2/21/92, Station Blackout SER Response

Condition Reports:

02-10539, 02-10998, 02-07647, 02-06045, 02-12332, 02-05831, 02-04040, 02-15217, 02-15144, 02-12778, 02-12726, 02-12310, 02-12035, 02-11992, 02-11990, 02-11989, 02-13859, 02-05389, 02-09188

Work Orders:

0204191, 0212141, 0212156, 0212172, 0212176, 0212178, 01212622, 0212623, 0213531, 0213620, 0220835, 0220836, 0220838, 0222312, 0222900, 0222901

Design Change Packages:

DCR 02-011, 345 KV GIS Surge Arrester Replacement, 8/28/02

Engineering Evaluations:

93-011, SF6 System Reliability Update
 88-001, J10 Relay System Evaluation
 Station Blackout Evaluation of NUMARC Initiation No. 5 for Seabrook Station

(Volume I & II), Rev. 3