

May 5, 2006

Mr. G. St. Pierre  
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 INTEGRATED INSPECTION REPORT  
05000443/2006002

Dear Mr. St. Pierre:

On March 31, 2006, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Seabrook Nuclear Power Station. The enclosed inspection report documents the inspection results which were discussed on April 19, 2006, with you and other members of your staff.

The 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.

This report documents three NRC-identified findings of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs), in accordance with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, 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 I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Seabrook.

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

Mr. G. St. Pierre

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Sincerely,

***/RA/***

Paul G. Krohn, Chief  
Projects Branch 6  
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000443/2006002  
w/ Attachment: Supplemental Information

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**U. S. NUCLEAR REGULATORY COMMISSION**

REGION I

Docket No.: 05000443

License No.: NPF-86

Report No.: 05000443/2006002

Licensee: Florida Power & Light Energy Seabrook, LLC (FPL)

Facility: Seabrook Station, Unit 1

Location: Post Office Box 300  
Seabrook, New Hampshire 03874

Dates: January 1, 2006 through March 31, 2006

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## SUMMARY OF FINDINGS

IR 05000443/2006002; 1/1/2006 - 3/31/2006; Seabrook Station, Unit 1; Evaluations of Changes, Tests, or Experiments and Operability Evaluations.

The report covered a 13-week period of inspection by resident inspectors and announced inspections by regional inspectors in the health physics and design engineering areas. Three Green non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59; "Changes, Tests, and Experiments." Specifically, Seabrook adversely changed the bases of Technical Specification (TS) 3.4.10, "Structural Integrity," to make it applicable to only the reactor coolant system pressure boundary piping, and not all American Society of Mechanical Engineers (ASME) code class piping. This, in effect, changed the intent of TS 3.4.10 without a license amendment. Following identification of this issue, Seabrook entered the issue into their corrective action program as condition report 06-03108.

This finding was addressed using traditional enforcement since it potentially impacted or impeded the regulatory process in that Seabrook used the 10 CFR 50.59 process to change the intent of an existing TS. This is contrary to the regulatory process that allows licensees to make changes without a license amendment provided that licensees comply with the 10 CFR 50.59 process. The finding is more than minor because there was a reasonable likelihood that the change would have required Commission review and approval prior to implementation. The finding is of very low safety significance because it did not require a quantitative assessment based on the shutdown risk mitigation capability of other available equipment. (Section 1R02)

- C Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." In January 2006, the inspectors identified degraded component cooling water flow to the residual heat removal pump seal cooler and the enclosure air handling cooler. Although the flows were determined to be below design basis values, additional engineering analysis demonstrated the degraded flow would not result in inoperability of the systems. Seabrook completed immediate actions to adjust the component cooling water flow to the safety-related components. This finding was associated with the cross-cutting area of problem identification and resolution in that operators

performing routine tours in the areas of the flow indicators and system engineers recording flows during quarterly walkdowns did not identify that the flow was degraded for eight months.

The finding is more than minor because it affected the Mitigating System cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an initiating event. The attribute of equipment performance was impacted by the degraded component cooling water flow. The finding is determined to be of very low safety significance (Green) since it did not result in loss of safety function of the equipment and it did not impact external initiating events. (Section 1R15.1)

- C Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." In December of 2005, Seabrook experienced a failure of the "B" emergency diesel generator (EDG) due to a voltage excursion. Corrective actions completed in April and May of 2005, to a previous voltage excursion were ineffective in preventing the December 2005 failure. Seabrook has since taken additional corrective actions to prevent additional failures of the "B" EDG including replacement of selected components. This finding was associated with the cross-cutting area of problem identification and resolution in that Seabrook did not assure adequate corrective actions were taken to preclude repetition of the "B" EDG failure.

The finding is more than minor because it affected the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. The failure to the "B" EDG affected one of the two EDGs which maintain power following the initiating event of a loss of offsite power. The finding is determined to be of very low safety significance (Green) since the EDG was inoperable for a short period of time due to the intermittent nature of the failure. (Section 1R15.2)

B. Licensee-Identified Violations

None.



## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at rated thermal power and operated at or near full power for the entire report period, except for approximately 20 separate small power reductions (less than three percent power reductions, typically to below 1200 Megawatts-electric) that were based on requests from the Regional Independent System Operator.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

##### 1R01 Adverse Weather Protection (71111.01 - One Sample)

###### a. Inspection Scope

The inspectors performed a walkdown of the Emergency Feedwater System (EFW) during a period of cold weather to ensure that system components were adequately protected from cold weather during winter months. The inspectors verified that the EFW pump house and other parts of the system were adequately heated to ensure operability of the system was maintained in cold weather.

###### b. Findings

No findings of significance were identified.

##### 1R02 Evaluations of Changes, Tests, or Experiments (IP 71111.02 - Nineteen Samples)

###### a. Inspection Scope

The inspectors reviewed six safety evaluations (SEs), all of which were either issued during the past two years or associated with plant modifications that were completed during the past two years. The SEs reviewed were in the Initiating Event, Mitigating Systems, and Barrier Integrity cornerstones. The selected SEs were reviewed to verify that changes to the facility or procedures as described in the Updated Final Safety Analysis Report (UFSAR) were reviewed and documented in accordance with 10 CFR 50.59, and that the safety issues pertinent to the changes were properly resolved or adequately addressed. The reviews also included the verification that Seabrook had appropriately concluded that the changes and tests could be accomplished without obtaining license amendments. The SEs reviewed are listed in the Attachment.

The inspectors also reviewed 13 screened-out evaluations for changes, tests and experiments for which Seabrook determined that SEs were not required. This review was performed to verify that Seabrook's threshold for performing SEs was consistent with 10 CFR 50.59. The screened-out evaluations reviewed are listed in the Attachment.

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In addition, the inspectors reviewed the administrative procedures that were used to control the screening, preparation, and issuance of the SEs to ensure that the procedure adequately covered the requirements of 10 CFR 50.59.

b. Findings

Introduction: The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59; "Changes, Tests, and Experiments." Specifically, Seabrook adversely changed the bases of TS 3.4.10, "Structural Integrity," to make it applicable to only the reactor coolant system (RCS) pressure boundary piping, and not all ASME code class piping. This, in effect, changed the intent of TS 3.4.10 without a license amendment.

Description: The inspectors reviewed minor modification (MMOD) 05-505 which Seabrook implemented for the purpose of restoring ASME code compliance of a section of service water (SW) pipe in the "A" train which had developed a through-wall leak. During the review, the inspectors noted that when Seabrook discovered the leak, they had invoked ASME code case -513-1, "Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 piping Section XI, Division 1," as justification to continue operation of the system with the flaw. Upon further review, the inspectors noted that the SW pipe did not meet the acceptance criteria of the code case. Specifically, the calculated safety factor was less than the minimum required by the code case, and Seabrook did not perform a detailed engineering review to justify continued operation of the system with the lower safety factor as required by the code case.

Because Seabrook did not perform a detailed engineering review, the inspectors assessed how Seabrook met the requirements of TS 3.4.10, "Structural Integrity," for the five day period of time from discovery until repair. Seabrook had determined that this TS was not applicable because it only applied to RCS pressure boundary piping in accordance with their TS bases. The inspectors reviewed 10 CFR 50.59 SE screen 2004-87, which was part of TS bases change No. 04-03, and was written to provide additional details on the scope of equipment considered under TS 3.4.10. Following consultation with the NRC TS Branch regarding the intent of TS 3.4.10, the inspectors determined that the intent of the TS was to be applicable to all ASME code class piping, and not just RCS pressure boundary piping. Consequently, the inspectors determined that Seabrook's TS bases change had, in effect, changed the intent of TS 3.4.10 without a license amendment. Subsequently, the inspectors also reviewed prior instances where Seabrook had experienced ASME code class 3 piping leakage to determine how they were treated and classified. Through this review, the inspectors determined that Seabrook had met the requirements of code case N-513-1 in these previous instances and this occurrence was an isolated event.

The inspectors determined that Seabrook's failure to adequately implement 10 CFR 50.59 requirements constituted a performance deficiency. Following identification of this issue, Seabrook entered the issue into their corrective action program as condition report (CR) 06-03108 and assigned actions to revise the TS bases.

Analysis: This finding was addressed using traditional enforcement, since it potentially impacted or impeded the regulatory process in that Seabrook used the 10 CFR 50.59 process to change the intent of TS 3.4.10. This is contrary to the regulatory process that allows licensees to make changes without a license amendment provided that licensees comply with the 10 CFR 50.59 process. The finding is more than minor because there was a reasonable likelihood that the change would have required Commission review and approval prior to implementation. The inspectors evaluated this finding using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," and determined that the finding was of very low safety significance (Green) because the condition resulting from the 10 CFR 50.59 violation did not require a quantitative assessment based on the shutdown risk mitigation capability of other available equipment.

Enforcement: Paragraph (c)(1) of 10 CFR 50.59 states that a licensee may make changes in the facility as described in the UFSAR, make changes in the procedures as described in the UFSAR, and conduct tests or experiments not described in the UFSAR without obtaining a license amendment pursuant to 10 CFR 50.90 only if a change to the Technical Specifications incorporated in the license is not required. Contrary to the above, on April 21, 2004, Seabrook implemented a TS bases change to TS 3.4.10, "Structural Integrity," which changed the intent of TS 3.4.10 from being applicable to all ASME code class pipe to only being applicable to the RCS pressure boundary piping, and failed to recognize that this would require a license amendment. Subsequently, on April 21, 2005, Seabrook failed to enter TS 3.4.10, when they discovered a through-wall leak on the SW system as a result of their bases change implemented in April 2004. In accordance with Section VI.A of the NRC Enforcement Policy (Supplement I - Reactor Operations; Example D.5) this violation is classified as a Severity Level IV violation because the underlying technical issue is of very low safety significance. Because this non-willful violation was non-repetitive, and was captured in Seabrook's corrective action program (CR 06-03108), it is considered a NCV consistent with VI.A.1 of the NRC Enforcement Policy (**NCV 05000443/2006002-01, Inappropriate 10 CFR 50.59 Safety Evaluation Screen**).

1R04 Equipment Alignment (71111.04)

.1 Full System Walkdown - Emergency Feedwater System (71111.04S - One Sample)

a. Inspection Scope

The inspectors conducted a detailed review of the alignment and conditions of the Emergency Feedwater System. The inspectors performed a walkdown to verify the system alignment was maintained in accordance with system drawings and procedures. Control room indications were verified to be appropriate and consistent with technical specification requirements and the UFSAR. The inspectors reviewed and evaluated the potential impact on system operation from open work orders, condition reports, and tagged equipment. System health reports were reviewed, verified during the walkdown, and discussed with the system engineer.

The inspectors reviewed the following documents to support the walkdown and to verify proper system alignment:

- C Piping and Instrumentation Drawings for the Emergency Feedwater system;
- C A sample of historical CRs related to the Emergency Feedwater system and its support systems (CRs 06-01162, 05-00460, and 05-00310); and
- C OS1036.01, "Aligning The Emergency Feedwater System for Automatic Initiation," Revision 6.

b. Findings

No findings of significance were identified.

.2 Partial System Walkdowns. (71111.04Q - Two Samples)

a. Inspection Scope

The inspectors performed the following partial system walkdowns:

- C the "B" charging system following a shift in vibration in the "A" charging pump on March 3, 2006.
- C the "A" residual heat removal (RHR) system following recently performed maintenance on the system on March 8 and 9, 2006.

The inspectors verified that the critical portions of selected systems, such as valve positions, switches, and breakers, were correctly aligned in accordance with Seabrook's procedures and evaluated discrepancies that may have had an operability effect. The inspectors reviewed applicable piping and instrumentation drawings and operational lineup procedures to support the walkdowns and verify proper system alignment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Walkdowns (71111.05Q - Eight Samples)

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 material condition of the passive fire protection features such as fire doors, fire dampers, and fire penetration seals; and 4) the compensatory measures for out-of-service or degraded fire protection equipment. The following areas were inspected:

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- C Control Building - Cable Spreading Room, 50' elevation;
- C "A" Electrical Cable Tunnel, 0' elevation;
- C "A" Vertical Electrical Cable Chase, 0' to 50' elevation;
- C "B" Electrical Cable Tunnel, -26' and -20' elevations;
- C "B" Vertical Electrical Cable Chase, 0' to 50' elevation;
- C Emergency Feedwater Pump House, 27' elevation;
- C "A" RHR Vault, all elevations; and
- C Unit 2 Turbine Building, all elevations.

The inspectors verified that the fire areas were in accordance with applicable portions of Fire Protection Pre-Fire Strategies and Fire Hazard Analysis.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Evaluation (71111.05A - One Sample)

a. Inspection Scope

On March 14, 2006, the inspectors observed an unannounced drill involving a simulated fire at the "A" primary component cooling water pump motor, located at the 25-foot elevation of the primary auxiliary building. The inspectors verified that drill performance criteria were established commensurate with its safety significance and compared the fire brigade performance against criteria contained in Fire Protection Manual, FP 4.1, "Fire Protection Program Training and Qualifications," Revision 6. The inspectors verified the following: 1) communication between the fire brigade leader, brigade members, and the control room operators was clear and effective; 2) equipment (radios, protective clothing, self-contained breather apparatus, fire extinguishers, etc.) was in good condition and properly used; and 3) fire fighting strategies and proper fire fighting practices were used. In addition, the inspectors evaluated the fire brigade drill critique and reviewed the post drill report to ensure deficiencies were appropriately identified and evaluated.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - One Sample)

a. Inspection Scope

The inspectors completed one internal flooding protection sample. The inspectors reviewed the flood protection measures to protect the essential switchgear rooms from an inadvertent actuation of the deluge system in the cable spreading room located above the essential switchgear room. Seabrook experienced an actuation of a portion of deluge system on February 5, 2006. The actual event is discussed in Section 1R14

of the report and other evaluations of flood protection issues are discussed in Sections 1R15 and 1R19.

The inspectors assessed whether the internal flooding protective measures were adequately addressed by Seabrook. The inspectors reviewed Seabrook's UFSAR and other design basis documents. The inspectors compared the as-found equipment and conditions with the design basis documents to ensure they were consistent.

b. Findings

No findings of significance were identified. The inspectors opened unresolved item (URI) 05000443/2006002-04 to track a number of issues, as described in Section 1R15.3 of this report.

1R11 Licensed Operator Requalification Program (71111.11Q - One Sample)

a. Inspection Scope

The inspectors observed the conduct of licensed operators during a simulator training session on March 2, 2006. The fidelity of the simulator was compared to the Seabrook control room. The inspectors examined the operators' ability to perform actions associated with high-risk activities, the Emergency Plan, and the correct use and implementation of procedures. The inspectors observed the training evaluator's critique of the operators' performance and verified that deficiencies were adequately identified and discussed.

b. Findings

No findings of significance were identified

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (71111.12Q - Three Samples)

The inspectors completed three maintenance rule samples reviewing three systems. The systems evaluated for maintenance rule implementation were the EFW system, the charging system, and the supplemental emergency power system (SEPS). The inspectors interviewed engineers, reviewed specific maintenance rule criteria, and examined condition reports and associated corrective actions.

The inspectors also reviewed the Seabrook UFSAR and the system health reports for the above systems. Corrective actions and maintenance rule functional failure evaluations were assessed against 10 CFR 50.65 requirements and against the guidance in Nuclear Management and Resources Council (NUMARC) 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13 - Five Samples)

a. Inspection Scope

The inspectors reviewed the scheduling and control of three planned maintenance activities and two emergent work troubleshooting activities in order to verify that Seabrook had properly evaluated the effect of the activity on plant risk. The inspectors conducted interviews with operators, risk analysts, maintenance technicians, and engineers to assess their knowledge of the risk associated with the work, and to ensure that other equipment was properly protected. The compensatory measures were evaluated against Seabrook procedures, Maintenance Manual 4.14, "Troubleshooting," and Work Management Manual 10.1, "On-Line Maintenance." Specific risk assessments were conducted using Seabrook's "Safety Monitor." The inspectors reviewed the following items.

- C On January 19, 2006, the inspectors reviewed the plant risk configuration during electrical grid maintenance which affected switchyard risk, emergent work on one service water pump, and routine surveillances on the reactor protection system relay testing. Seabrook's risk assessment and controls established to reduce risk were also evaluated.
- C On January 10 through 16, 2006, the inspectors reviewed work order (WO) 0526286 including all four scope changes following an arcing event that damaged a battery wiring harness during battery replacement on the "B" SEPS engine. The inspectors interviewed the operators, mechanics, and engineers involved to ensure that the reliability of SEPS was maintained.
- C On February 17, 2006, the inspectors reviewed the plant risk configuration during planned electrical grid maintenance which affected switchyard risk and high wind conditions experienced at the site. Seabrook's risk assessment, operators' ability to evaluate plant risk, and compensatory measures taken to reduce risk were also evaluated.
- C On February 27, 2006, the inspectors reviewed the plant risk configuration during a planned electrical maintenance outage on the 480 V substation 1-EDE-US-64, which removed the "B" cooling tower train from service, and rod control surveillance testing. The inspectors reviewed Seabrook's risk assessment, conducted independent walkdowns of the cooling tower, and reviewed compensatory measures taken to compensate for the removal of the electrical bus. The inspectors reviewed the following documents: load lists for the electrical bus and its associated motor control center; one line diagram for

the motor control center; OS 1046.68, "MCC-641 Maintenance Procedure," Revision 0; and OS1048.23, "Bus 6 Outage Procedure," Revision 0.

- C On March 7, 2006, the inspectors reviewed the plant risk configuration during a planned electrical maintenance outage on the 480 V substation 1-EDE-US-62, which removed several components from service including the "B" enclosure air handling fan. The inspectors reviewed Seabrook's risk assessment and compensatory measures taken to reduce risk.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Non-Routine Plant Evolutions and Events (71111.14 - One Sample)

a. Inspection Scope

On February 5, 2006, Seabrook experienced an inadvertent discharge of the cable spreading room fire protection deluge system. During periodic testing, operators inadvertently actuated one of the five systems, which resulted in water spraying on cabling in the area. Operators isolated the system and took actions to remove the water. The inspectors reviewed operator actions taken in response to the event, discussed the event with Operation's Management, and reviewed CR 06-01306. The inspectors evaluated Seabrook actions against their procedures, their corrective action program, and NRC requirements regarding corrective action.

b. Findings

No findings of significance were identified. The inspectors opened URI 05000443/2006002-04 to track a number of issues, as described in Section 1R15.3 of this report.

1R15 Operability Evaluations (71111.15 - Five Samples)

.1 Failure to Identify and Correct Degraded Component Cooling Water Flow to Safety-Related Components

a. Inspection Scope

The inspectors reviewed the operability evaluations for degraded component cooling water (CCW) flow to the "B" RHR pump seal cooler and the "B" enclosure air handling (EAH) cooler. The evaluations were reviewed using criteria specified in Generic Letter 91-18, "Resolution of Degraded and Nonconforming Conditions" and Inspection Manual Part 9900, "Operable/Operability - Ensuring the Function Capability of a System or Component." The inspectors performed field walkdowns, interviewed personnel, and



reviewed system engineering walkdown data and CRs 06-00181, 06-00215, and 03-04476.

b. Findings

Introduction: The inspectors identified degraded CCW flow to the RHR pump seal cooler and the EAH cooler. Although the flows were determined to be below design basis values, additional engineering analysis demonstrated the degraded flow would not result in inoperability of the systems. This finding was determined to be of very low safety significance (Green) and was characterized as an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

Description: In January 2006, through system walkdowns and review of CCW flow data, the inspectors identified degraded flow to the "B" EAH cooler and the "B" RHR pump seal cooler. The actual flows observed at the EAH and RHR coolers were approximately 330 and 5.5 gpm, respectively, following the April 2005 refueling outage until January 2006. During design basis accident conditions, CCW flow is increased to other safety components and the flow to the EAH and RHR coolers would decrease from 330 to 300 gpm and 5.5 gpm to 4.4 gpm, respectively. Therefore, the required design CCW flow for the EAH cooler and RHR cooler of 325 and 5 gpm, respectively, as specified in UFSAR Table 9.2-6, would not be maintained.

Seabrook performed several immediate actions to ensure operability of the system including repositioning the throttled valves in the system. Repositioning the valves increased flow to the EAH and RHR coolers to 390 and 6.4 gpm, respectively, which restored the systems to their pre-refueling outage flow values. Seabrook's initial assessment was the degraded flow was based on variability in flow when throttling a valve to a specific number of turns as specified in their operating procedures.

Seabrook conducted an operability and past reportability assessment for the degraded flows. Seabrook concluded that the reduced flow would be sufficient to provide the needed cooling to the EAH and RHR coolers during design basis events. The inspectors reviewed the evaluations for accuracy. Seabrook also completed a design modification to adjust the CCW throttled valve position to the RHR cooler to increase the design margin of the system. This resulted in increasing the flow to the RHR cooler to greater than 8 gpm.

Seabrook's failure to identify and correct degraded CCW flow to safety-related coolers was a performance deficiency. Seabrook had multiple opportunities to identify the issue from May 2005 to January 2006 including operator rounds and quarterly system engineering walkdowns.

Analysis: The finding was more than minor because it affected the Mitigating System cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an initiating event. The attribute of equipment performance was impacted by the degraded CCW flow. In addition, using Appendix E of IMC 0612, examples 3.j and 3.h are applicable, in that, although the system remained operable there was a

significant reduction in safety margin. Using Appendix A, Phase 1 of IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Stations," dated November 22, 2005, the finding was determined to be of very low safety significance (Green) since it did not result in loss of safety function of the equipment and it did not impact external initiating events.

This finding was associated with the cross-cutting area of problem identification and resolution in that Seabrook did not identify and correct the degraded CCW flow to the RHR pump and EAH coolers. These issues were entered into the corrective action program as CRs 06-00181 and 06-00215.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" requires "measures shall be established to assure that conditions adverse to quality, such as ... deficiencies ... are promptly identified and corrected."

Contrary to the above, Seabrook did not promptly identify and correct the degraded CCW flow to the "B" RHR pump seal and to the "B" EAH cooler. The degraded condition was determined to have existed from May 1, 2005, until January 5, 2006. Seabrook did not identify that the flow was degraded even though operators performed routine tours in the areas of the flow indicators and system engineers recorded the flows during quarterly walkdowns. Following the inspectors identification of the degraded flow, Seabrook took immediate actions to increase the cooling flow and evaluated long term corrective actions to increase the margin. Because this finding was of very low safety significance and has been entered into the Seabrook's corrective action program (CRs 06-00181 and 06-00215), this finding is being treated as an NCV consistent with Section VI.A.1 of the Enforcement Policy (**NCV 05000443/2006002-02, Failure to Identify and Correct Degraded Component Cooling Water Flow to Safety-Related Components**).

.2 Failure to Correct Degraded Voltage Regulation on the "B" EDG

a. Inspection Scope

On December 7, 2005, Seabrook experienced a failure of the "B" EDG during routine surveillance testing. An URI was generated in NRC Inspection Report 05000443/20005011 to further assess Seabrook's evaluation of the failure. The inspectors reviewed the troubleshooting and repair efforts for the voltage excursion events on the "B" EDG. The inspectors interviewed personnel and performed field walkdowns of the "B" EDG. The inspectors reviewed CRs 05-05540 and 05-14567 which evaluated the voltage excursions and operability of the "B" EDG. The CRs were reviewed using criteria specified in Generic Letter 91-18, "Resolution of Degraded and Nonconforming Conditions" and Inspection Manual Part 9900, "Operable/Operability - Ensuring the Function Capability of a System or Component."

b. Findings

Introduction: Seabrook experienced a December 2005 failure of the "B" EDG due to ineffective corrective actions to a previous April 2005 EDG failure. This self-revealing issue will be considered an NRC-identified finding due to inspector value added to the initial cause analysis. This finding was determined to be of very low safety significance (Green) and was characterized as an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

Description: On December 7, 2005, Seabrook experienced a voltage excursion on the "B" EDG during a routine surveillance. The voltage excursion was a recurrence of the problem that occurred on April 24, 2005 on the "B" EDG. Both voltage excursions required the "B" EDG to be declared inoperable while troubleshooting efforts and repairs were implemented to identify and correct the intermittent problem. In April, Seabrook diagnosed the most likely cause of the problem as being in the "B" rectifier chassis. The second most likely cause of the problem was the gate firing circuit board. Seabrook's corrective action to the April voltage excursion was to place the redundant "A" rectifier chassis in service. Seabrook replaced the gate firing circuit board for the "B" EDG following the December voltage excursion. In February of 2006, a failure analysis was completed on the "B" rectifier chassis and the gate firing circuit board. The failure analysis did not identify any anomalies on the "B" rectifier chassis and did identify some anomalies on the gate firing circuit board which led to the over voltage events.

The failure to correctly identify and correct the cause of the "B" EDG failure in April 2005 prior to the December EDG failure was a performance deficiency. The original troubleshooting efforts identified two potential causes for the first voltage excursion. Seabrook determined the rectifier chassis to be the cause based on previous experience and discussions with the vendor. Seabrook did not, however, eliminate the gate firing circuit board as a potential cause. Also, Seabrook did not immediately send the rectifier chassis to a vendor for a complete failure analysis to confirm their conclusion. The rectifier chassis had not been tested prior to the second failure in December 2005. The inspectors identified these weaknesses with Seabrook's original troubleshooting efforts following the April event (see NRC Inspection Report 05000443/2005005). This finding will be considered NRC-identified based on the inspectors' identification of the weaknesses with the original troubleshooting efforts.

Analysis: The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. The failure to prevent the recurrence of the "B" EDG failure affected the objective of maintaining power following the initiating event of a loss of offsite power. Using Appendix A, Phase 1 of IMC 0609, the finding was determined to be of very low safety significance (Green) since it did not result in loss of the "B" EDG for greater than the TS limiting condition of operation due to the intermittent nature of the failure.

Due to the intermittent nature of the failure and the decreased reliability of the EDG, the inspectors conducted additional analysis of the finding to support and confirm the risk

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significance determined by Phase 1 of IMC 0609. The senior reactor analyst assisted the inspectors and evaluated the finding using the Risk-Informed Inspection Notebook for Seabrook Station, Revision 2. The analyst made the following assumptions:

- Given the elevated voltage, the EDG could supply the E6 bus for one hour. After 1 hour the elevated voltage would fail the bus. Therefore a failure of the bus on a loss of offsite power is modeled.
- Exposure time is estimated to be seven months (The approximate time between the first and second voltage regulator failure.)
- The estimated failure probability of the voltage regulator is 1 in 7 (0.1428).
- The failure probability to restore off site power in one hour is 0.53.
- The failure probability to start and align the SEPS in one hour is 0.02.
- The initiating event likelihood for a loss of Bus B (E6) was increased by one order of magnitude.

The finding only increased the likelihood of the loss of Class 1E 4.16 kV AC Bus B (E6) during a LOOP. Therefore, only Table 3.18, LEACB was solved. The significant core damage sequences involved a LEACB with failure of the PORV to reclose, followed by the failure of either 1) low pressure recirculation, or 2) early inventory with high pressure injection or 3) emergency feedwater and feed and bleed.

Given the results of the Notebook, the analyst performed an analysis for internal initiators using the Standardized Plant Analysis Risk (SPAR) model for Seabrook Station, Revision 3.22. The same assumptions were used as described above for the Notebook analysis, with the exception that an actual exposure time of 5040 hours (7 months) was used in the SPAR model simulation. The Seabrook Station SPAR model Basic Event, "ACP-BAC-LP-E6" for Division 1B AC Power 4160 Bus E6 Fails, baseline probability was 4.8E-6. For the given condition, this value was adjusted to account for the increased failure probability of the voltage regulator, the failure to restore offsite power in one hour and the failure to start and align the SEPS diesels in one hour. The revised probability was;

$$\text{ACP-BAC-LP-E6} = 0.1428 * 0.53 * 0.02 = 1.51\text{E-}3.$$

When evaluated over the exposure time of 5040 hours, the incremental conditional core damage probability (the change in core damage frequency over the exposure time) associated with this finding was approximately 5E-8. Accounting for the contribution from external events this resulted a conditional core damage probability of approximately 1E-7. The most significant core damage sequence involved a loss of switchgear ventilation and a seal LOCA. Since the SPAR model includes sequences associated with the failure of the PORV to re-close after it is demanded in a LOOP, the significant core damage sequences are different from the SDP.

The analyst concluded the SPAR model significant core damage sequences and result was a reasonable estimation of the risk associated with this finding. The Notebook result was conservative because the initiating event likelihood used was based on exposure time of 1 year (8760 hours) and the SPAR model analysis used the actual maximum exposure time of 5040 hours. The analyst also determined that an evaluation of risk resulting from a large early release frequency perspective was not required. This was because of the containment design and characterization of the finding. Therefore, this confirmed the earlier conclusion that this was a finding of very low safety significance (Green).

This finding was associated with the cross-cutting area of problem identification and resolution in that Seabrook did not assure adequate corrective actions were taken to preclude repetition of the "B" EDG failure. This issue was entered into the corrective action program as CRs 05-05540 and 05-14567.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" requires that for significant conditions adverse to quality, the cause of the condition must be determined and corrective actions taken to prevent recurrence.

Contrary to the above, Seabrook did not implement corrective actions to prevent recurrence of an over voltage condition on the "B" EDG. On April 24, 2005, Seabrook experienced a failure of their "B" EDG due to a voltage excursion. Seabrook addressed one potential cause by replacing the rectifier chassis. However, Seabrook did not eliminate an additional potential cause of the gate firing circuit board, nor did they promptly have the replaced rectifier chassis sent to a vender for a failure analysis to confirm their causal determination. On December 7, 2005, the "B" EDG experienced a second failure due to a voltage excursion. Seabrook replaced the gate firing circuit board and had the failure analysis on the rectifier chassis completed and a failure analysis performed on the gate firing circuit board. The failure analysis did not identify any anomalies on the "B" rectifier chassis and did identify some anomalies on the gate firing circuit board which led to the over voltage events. Because the finding was of very low safety significance and has been entered into Seabrook's corrective action program (CRs 05-05540 and 05-14567), this is being treated as an NCV consistent with Section VI.A.1 of the Enforcement Policy (**NCV 05000443/2006002-03, Inadequate Corrective Actions Result in a Repeat Failure of the "B" EDG**).

### .3 Assessment and Evaluation of Degraded Hydrostatic Seals

#### a. Inspection Scope

The inspectors reviewed operability assessments associated with degraded flood protection penetration seals in the cable spreading room. The seals provide a barrier between the fire protection deluge system in the cable spreading room and the "A" and "B" essential switchgear rooms located directly below the cable spreading room. The inspectors reviewed Seabrook's evaluation of the degraded seals for their hydrostatic, air, and fire protection functions and examined compensatory actions implemented. The actions taken were evaluated against NRC requirements and Seabrook procedural

requirements. Documents reviewed during the inspection are listed in the Attachment. The inspectors completed several inspections in this area and these inspections are documented in Section 1R14, 1R15, and 1R19 of this report.

b. Findings

Following an inadvertent actuation of the cable spreading room deluge system on February 5, 2006, Seabrook identified water in the "A" essential switchgear room, located directly below the activated deluge zone (see Section 1R14 for more details). Seabrook determined there were no operability concerns, because none of the essential switchgear equipment had been impacted. During a walkdown following the deluge, the NRC identified a degraded floor penetration seal (CR 06-01416), and shortly thereafter, Seabrook identified two additional degraded seals. Seabrook conducted an extent-of-condition inspection and identified that 13 of 15 seals were degraded. During subsequent reviews, the inspectors identified a number of potential performance issues including: 1) timeliness in the identification of degraded seals; 2) adequacy of evaluation of degraded seals hydrostatic function; 3) acceptability of the post-maintenance testing following repairs; and, 4) adequacy of the overall flood protection design in the cable spreading room. These issues will remain unresolved until Seabrook completes their causal and reportability analyses of the degraded seals, develops corrective actions, and completes their extent-of-condition evaluation (**URI 05000443/2006002-04, Degraded Cable Spreading Room Flood Seals**). The inspectors will review the results of these evaluations and determine if any performance deficiencies existed and the potential safety significance of those deficiencies.

.4 Miscellaneous Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations and/or condition reports in order to verify that the identified conditions did not adversely affect safety system operability or plant safety. The evaluations were reviewed using criteria specified in Generic Letter 91-18, "Resolution of Degraded and Nonconforming Conditions" and Inspection Manual Part 9900, "Operable/Operability - Ensuring the Function Capability of a System or Component." In addition, where a component was determined to be inoperable, the inspectors verified the TS limiting condition for operation implications were properly addressed. The inspectors performed field walkdowns, interviewed personnel, and reviewed the following items:

- C CR 06-00896, which evaluated a through-wall leak on the "D" service water pump discharge piping. The inspectors reviewed the CR, the operability determination, and the supporting calculations. The inspectors also interviewed the cognizant engineer.
- C CR 06-00571, which evaluated elevated shaft vibration reading on the "C" service water pump. The inspectors interviewed operators, reviewed the CR, and examined actions taken after operators declared the pump inoperable.

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b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17B - Seven Samples)

a. Inspection Scope

The inspectors reviewed seven risk-significant plant modification packages selected from the design changes that were completed within the past two years. The review was performed to verify that: 1) the design bases, licensing bases, and performance capability of risk significant structures, systems, and components had not been degraded through the modifications; and, 2) the modifications performed during increased risk configurations did not place the plant in an unsafe condition. The modifications reviewed are listed in the Attachment.

The selected plant modifications were distributed among the Initiating Event, Mitigating Systems, and Barrier Integrity cornerstones. For these selected modifications, the inspectors reviewed the design inputs, assumptions, and design calculations to determine the design adequacy. The inspectors also reviewed field change notices that were issued during the installation to confirm that the problems associated with the installation were adequately resolved. In addition, the inspectors reviewed the post-modification testing, functional testing, and instrument and relay calibration records to determine readiness for operations. Finally, the inspectors reviewed the affected procedures, drawings, design basis documents, and UFSAR sections to verify that the affected documents were appropriately updated.

For the accessible components associated with the modifications, the inspectors also walked down the systems to detect possible abnormal installation conditions.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - Five Samples)

a. Inspection Scope

The inspectors reviewed post-maintenance testing (PMT) activities to ensure: 1) the PMT was appropriate for the scope of the maintenance work completed and in accordance with MA 3.5, "Post Maintenance Testing;" 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:

- C On February 22, 2006, the inspectors observed maintenance evolutions and reviewed the post-maintenance activities for Work Order (WO) 0503560 following actuator diaphragm replacement on valve RH-V-54. The inspectors

also interviewed the valve maintenance technicians and maintenance supervision.

- C On March 6, 2006, the inspectors observed the implementation of maintenance support evaluation (MSE) 06-027. The MSE evaluated increasing CCW flow to the residual heat removal pump seal cooler. This was a corrective action in response to issues identified by the inspectors discussed in Section 1R15.1 of this report. The inspectors observed the performance of WO 0610176 and verified that adequate flow was achieved at the completion of the work.
- C On March 9, 2006, the inspectors observed maintenance activities and reviewed the post-maintenance testing on the "B" diesel fire pump covered under WO 0533143. The inspectors interviewed the maintenance technicians, the fire fighter, and the non-licensed operator.
- C On March 14, 2006, Seabrook completed Work Order 0604368 for repair of 15 floor penetration seals in the cable spreading room. The inspectors walked down the seals following their repair, reviewed each work order, and interviewed the maintenance technicians. The inspectors opened URI 05000443/2006002-04 to track a number of issues, as described in Section 1R15.3.
- C On March 15, 2006, the inspectors observed maintenance activities and reviewed the post-maintenance testing on the "A" emergency diesel generator covered under WO's 0537026 and 0545839. The inspectors interviewed the maintenance mechanics, engineers, and operators.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - Six Samples)

a. Inspection Scope

The inspectors observed portions of 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 Technical Specifications and surveillance procedures.

The inspectors attended selected pre-evolution briefings, performed system and control room walkdowns, observed operators and technicians perform test evolutions, reviewed system parameters, and interviewed system engineers and field operators. The test data recorded was compared to procedural and technical specification requirements, and to prior tests to identify any adverse trends. The following surveillance procedures were reviewed:

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- C On January 12, 2006, IX1605.013, "IST Solenoid Valve Time Response Testing," Revision 1;
- C On February 14, 2006, LX0556.04, "Station Battery Service Test," Revision 2;
- C On February 22, 2006, LX0563.06, "Loss of Voltage Protection Monthly Surveillance," Revision 3 and LX0563.07, "Bus Degraded Voltage Protection Monthly Surveillance," Revision 1;
- C On February 22, 2006, OX1436.03, "Electric-Driven Emergency Feedwater Pump Quarterly Surveillance," Revision 8;
- C On March 2, 2006, ON1416.11, "Cooling Tower Portable Makeup Pump Semi-Annual Diesel Run," Revision 3; and
- C On March 21, 2006, OX1436.02, "Turbine-Driven Emergency Feedwater Pump Quarterly and Monthly Valve Alignment," Revision 8 (IST Surveillance).

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - One Sample)

a. Inspection Scope

The inspectors reviewed temporary modification 06-002, Revisions 0 and 1 and associated implementing documents to verify Seabrook's design basis and system operability were maintained. The temporary modification was associated with the installation of a mechanical leak repair device to stop a leak on the non-safety portion of the service water system experienced on January 21, 2006. The device consisted of seal material and a metal clamp to retain the seal material. The inspectors interviewed engineers and operators, completed field walkdowns, and reviewed Maintenance Manual, MA 4.3A, "Temporary Modifications and Temporary Alterations," Revision 17. The inspectors also reviewed the extent-of-condition evaluation and ultrasonic testing results to determine potential impact on any safety-related portions of the service water system.

The inspectors verified that the temporary modification was completed in accordance with NRC requirements and plant procedures. The procedural requirements included modifications to plant drawings, tagging of plant equipment affected by the temporary modification, and procedural changes. The inspectors verified 10 CFR 50.59 reviews and 10 CFR 50.65(a)(4) risk evaluations were complete and accurate. The inspectors also examined the combined effect of the modification with other outstanding temporary modifications.

b. Findings

No findings of significance were identified.

## EMERGENCY PREPAREDNESS

### 1EP6 Drill Evaluation (71114.06 - Two Samples)

#### .1 Combined Function Drill

##### a. Inspection Scope

On January 24, 2006, the inspectors observed the combined function drill 06-01, to evaluate the conduct of the drill and adequacy of Seabrook's post-drill critique. The inspectors verified that event classifications and notifications were properly conducted in accordance with NEI 99-02, "Regulatory Assessment Indicator Guideline." The inspectors observed the technical support center to ensure that priorities were appropriately identified and communicated. The inspectors also verified that identified problems were entered into the corrective action program through observation of the critique, review of the drill evaluation report, interviews of applicable drill participants, and review of condition reports initiated.

##### b. Findings

No findings of significance were identified.

#### .2 Classification and Notification during Requalification Training

##### a. Inspection Scope

The inspectors reviewed the operators' emergency classification and notification completed during requalification training on March 2, 2006 (See Section 1R11). The inspectors evaluated the results against Seabrook's Emergency Response Manual 1.1, "Classification of Emergencies" and NEI 99-02.

##### b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety

#### 2OS1 Access to Radiologically Significant Areas (71121.01 - Eleven samples)

##### a. Inspection Scope

During the period January 16 to 19, 2006, the inspectors conducted the following activities to verify that Seabrook was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas, and other radiologically controlled areas during power operations, and that workers were adhering to these

controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, Seabrook Technical Specifications, and Seabrook's procedures.

#### Plant Walkdown and RWP Reviews

The inspectors identified exposure significant work areas, including the Containment Building and the Calibration Facility. Tasks in the Containment Building included replacement of a pressure switch on an air compressor, on January 17, 2006, stroke testing valve RH-V-49, and preparing for a diaphragm replacement of NG-V-17, on January 19, 2006. Tasks in the Calibration Facility included pre-operational safety checks of the 400 Curie Sheperd Model 81 beam irradiator. The inspectors reviewed the radiation work permits (RWP) and the radiation survey maps associated with these work areas to determine if the radiological controls were acceptable.

The inspectors toured accessible radiological control areas, and with the assistance of a radiation protection technician, performed independent radiation surveys of selected areas in the Primary Auxiliary Building, Waste Processing Building, and Fuel Handling Building to confirm the accuracy of survey maps and the adequacy of postings.

In reviewing RWPs, the inspectors evaluated electronic dosimeter dose/dose rate alarm set points to determine if the set points were consistent with the survey locations and plant policy. The inspectors verified that the workers were knowledgeable of the actions to be taken when the electronic dosimeter alarms or malfunctions for tasks being conducted under selected RWPs. Work activities reviewed included containment entries at power, Modes 1 and 2 (RWP 06-010), instrument calibrations using the beam irradiator (RWP 06-007), health physics department routine tasks (RWP 06-001) and management plant walkdowns (RWP 06-004).

The inspectors reviewed elements of a newly implemented RWP/access control system. The inspectors reviewed training materials, condition reports, and received demonstrations on the capabilities of this system.

The inspectors reviewed the radiological controls applied to recent tasks completed in plant radiation areas. Included in this review was a diaphragm replacement on CS-V-312, a VT-1 inspection on containment spray piping, and laser mapping of Containment (-) 26' elevation to support sump protective barrier modifications.

#### Problem Identification and Resolution

The inspectors reviewed elements of Seabrook's corrective action program related to controlling access to radiologically controlled areas, completed since the last inspection of this area, to determine if problems were being entered into the program for resolution. Details of this review are contained in Section 4OA2 of this report.

### Job-In-Progress

The inspectors observed aspects of various maintenance activities being performed during the inspection period to verify that radiological controls, such as required surveys, area postings, job coverage, and pre-job RWP briefings were appropriately conducted; personnel dosimetry was appropriately worn; and that workers were knowledgeable of work area radiological conditions. Tasks observed included containment entries during power operations, on January 17 and 19, 2006, and pre-operational checks of the Model 81 beam irradiator.

### High Risk Significant, High Dose Rate HRA and VHRA Controls

The inspectors discussed with the Health Physics Supervisor and senior technicians, High Radiation Area (HRA) areas and Very High Radiation Area (VHRA) controls and procedures. These special areas included under-vessel areas in the containment building, irradiated hardware stored in the spent fuel pool, and chemical & volume control system demineralizers in the primary auxiliary building. The inspectors evaluated the prerequisite communications, procedural authorizations, and operational controls that must be implemented prior to conducting activities in these plant areas. The inspectors verified that any changes to relevant licensee procedures did not substantially reduce the effectiveness and level of worker protection. Controls for significant high risk areas included entry of personnel into containment during power operations, and controls for operating a 400 Curie beam irradiator.

The inspectors verified that accessible locked HRAs were properly secured and posted during plant tours and keys to locked high radiation areas and very high radiation areas, maintained at the radiation protection control point and in the control room, were inventoried.

The inspectors attended an outage planning meeting on January 17, 2006, regarding the planning and preparations for conducting dose significant tasks during the upcoming fall refueling outage. These tasks included non-destructive volumetric examinations of the reactor head and removal/replacement of the control rod guide tube split pins.

### Radiation Worker/Radiation Protection Technician Performance

The inspectors observed radiation worker and radiation protection technician performance by attending various pre-job RWP briefings and a morning Radiation Protection Department staff meeting and observing jobs-in-progress.

The inspectors reviewed condition reports related to radiation worker and radiation protection technician errors to determine if an observable pattern traceable to a common cause was evident.

#### b Findings

No findings of significance were identified.

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#### 4. OTHER ACTIVITIES

##### 4OA2 Identification and Resolution of Problems (71152)

###### .1 Review of Items Entered into the Corrective Action Program

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to discern repetitive equipment failures or specific human performance issues for followup, the inspectors performed a daily screening of items entered into Seabrook's corrective action program. This was accomplished by reviewing the description of each new CR and attending daily management review committee meetings.

###### .2 Issues Reviewed During 10 CFR 50.59 and Modifications Inspection

###### a. Inspection Scope

The inspectors reviewed CRs associated with 10 CFR 50.59 issues and plant modification issues to ensure that Seabrook was identifying, evaluating, and correcting problems associated with these areas and that the planned or completed corrective actions for the issues were appropriate. The inspectors also reviewed audit and self-assessments related to 10 CFR 50.59 SEs and plant modification activities at Seabrook. The CRs and self-assessments reviewed are listed in the Attachment.

###### b. Findings

No findings of significance were identified.

###### .3 Access Control to Radiologically Significant Areas

###### a. Inspection Scope

The inspectors reviewed CRs, recent Radiation Safety Committee meeting minutes, a Radiation Protection Department self-assessment, Daily Quality Summary Reports, and Radiation Protection Continuous Improvement Plan to evaluate Seabrook's threshold for identifying, evaluating, and resolving occupational radiation safety problems. This review included a check of possible repetitive issues, such as radiation worker and radiation protection technician errors.

The review was conducted against the criteria contained in 10 CFR 20, Technical Specifications, and Seabrook's procedures.

###### b. Findings and Conclusions

No findings of significance were identified.

.4 Annual Sample Review (71152 - One Sample) - High Preventive Maintenance Backlog

a. Inspection Scope

The inspectors reviewed Seabrook's list of preventive maintenance (PM) activities that have exceeded their scheduled completion date. The inspectors specifically reviewed: 1) a sample of deferral evaluations of PM activities beyond 125 percent of their normal frequency during the last year; 2) all Technical Specification surveillances that exceeded their normal frequency; and 3) a sample of non-Technical Specification required PM activities that exceeded their normal frequency. The review was evaluated against Seabrook's maintenance manual, MA 9.2, "Maintaining the PM Technical Basis," Revision 4, Technical Specifications surveillance requirements, and 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants."

b. Findings and Conclusions

No findings of significance were identified.

In early February, the inspectors noted that Seabrook had 28 TS preventive maintenance items and approximately 550 other PM items scheduled for longer than 110 percent of the original frequency. This number of TS items was significantly higher than previous times. Seabrook determined the cause of the delayed performance and scheduling was due to human resources and qualification issues, alignment of plant work, and various other reasons. Seabrook's corrective actions in CR 06-00559 included adding detailed management expectations into WM 9.1, "Technical Specification Surveillance Performance and Scheduling," Revision 0, regarding completion of TS PMs. The inspectors concluded that corrective action for the TS PMs was appropriate and initial results demonstrated a declining trend.

The number of other PMs being scheduled beyond their normal frequency has increased by approximately 200 since January 2005. This increase has been attributed to: 1) PMs removed from the outage and placed into the online schedule; 2) development of additional PMs for new equipment and to improve equipment reliability; and 3) availability of maintenance resources to complete the PMs. Seabrook has established several corrective actions (CR 06-02290) to address this issue including: 1) placing a hold on removing any additional PMs from the refueling outage; 2) reviewing extending frequency of PMs; 3) improving efficiency of completing PMs; and 4) adding additional maintenance personnel to complete PMs.

4OA5 Other Activities

- .1 (Closed) URI 50-443/2005011-02, Loss of Inverter 1F and Notice of Enforcement Discretion and LER 50-443/2005-008, Noncompliance with the Technical Specifications due to Inoperable Instrument Bus Inverter.

a. Inspection Scope

On November 30, 2005, Seabrook exceeded the Technical Specification allowed outage time for an inoperable vital instrument bus inverter. Prior to the expiration of the allowed outage time, Seabrook requested and was granted a Notice of Enforcement Discretion that extended the allowed outage time by 18 hours. Seabrook completed repairs to the inverter within the additional allotted time. This event was described in NRC Inspection Report 50-443/2005-011, Section 1R13.1.

The inspectors reviewed Seabrook's cause analysis in CR 05-14539 and laboratory test results to determine if any performance deficiencies existed. Seabrook determined the most probable cause was a poor electrical connection of a logic card into the circuit. Although the event constituted a violation of Technical Specifications, the inspectors concluded that it was not a result of a licensee performance deficiency and therefore was not evaluated as a potential finding. This URI and licensee event report (LER) are closed.

b. Findings

No findings of significance were identified.

.2 (Closed) URI 50-443/2005011-03, Voltage Excursion on the "B" EDG.

The inspectors determined this was an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This issue is documented in Section 1R15.3 of this report.

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. G. St. Pierre on April 19, 2006, 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.

Site Management Visit

On March 23, 2006, Mr. Luis Reyes, Executive Director of Operations and Mr. Marc Dapas, Deputy Regional Administrator Region 1, toured the site and met with Mr. Gene St. Pierre and other members of licensee management.

On March 30, 2006, Mr. A. Randolph Blough, Director, Division of Reactor Safety, toured the site and met with Mr. Gene St. Pierre and other members of licensee management.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee personnel

W. Alcusky, Senior Nuclear Engineer  
P. Allen, Senior Health Physics Technician  
R. Belanger, Principle Nuclear Engineer  
M. Bianco, Supervisor, Radiological Waste Services  
M. Black, Security Manager  
M. Chevalier, Senior Health Physics Technician  
T. Date, Senior Health Physics Technician  
D. Flahardy, Health Physics Specialist - Nuclear  
G. Flanders, Senior Health Physics Technician  
P. Freeman, Engineering Director  
T. Glowacky, Senior Engineer Nuclear in Design Engineering  
D. Hampton, Health Physics Shift Supervisor  
D. Kelley, EOP Coordinator  
G. Kilby, Principle Engineer - Licensing  
M. Kiley, Station Director  
J. Kimball, Nuclear Oversight Auditor  
M. Makowicz, Plant Engineering Manager  
T. Manning, Senior Engineer Analyst Nuclear in Plant Engineering  
B. McCormack, Service Water System Engineer  
D. McGonigle, Design Engineering  
S. Morrissey, Assistant Operations Manager  
M. O'Keefe, Regulatory Compliance Supervisor  
A. Paliulis, Senior Engineer - Nuclear  
J. Peschel, Manager Regulatory Programs  
D. Ritter, Operations Manager  
M. Scannell, Health Physics Shift Supervisor - Nuclear  
D. Sherwin, Maintenance Manager  
T. Smith, Health Physics Shift Supervisor - Nuclear  
R. Sterritt, Health Physics Specialist - Nuclear  
G. St. Pierre, Site Vice President  
M. Sullivan, Senior Health Physics Technician  
R. Thurlow, Radiation Protection Manager



**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**Opened:

05000443/2006002-04	URI	Degraded Cable Spreading Room Flood Seals (Section 1R15.3)
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Closed:

05000443/2005011-02	URI	Loss of Inverter 1F and Notice of Enforcement Discretion (Section 4OA5.1)
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05000443/2005-008	LER	Noncompliance with the Technical Specifications due to Inoperable Instrument Bus Inverter (Section 4OA5.1)
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05000443/2005011-03	URI	Voltage Excursion on the "B" EDG (Section 4OA5.2)
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Opened and Closed

05000443/2006002-01	NCV	Inappropriate 10CFR50.59 Safety Evaluation Screen. (Section 1R02)
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05000443/2006002-02	NCV	Failure to Identify and Correct Degraded Component Cooling Water Flow to Safety-Related Components (Section 1R15.1)
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05000443/2006002-03	NCV	Inadequate Corrective Actions Result in a Repeat Failure of the "B" EDG (Section 1R15.2)
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**LIST OF DOCUMENTS REVIEWED****Section 1R02: Evaluation of Changes, Tests, or Experiments and Section 1R17  
Permanent Plant Modifications**10 CFR 50.59 Applicability Determinations

UFCR No. 05-008; dated 3/9/05, Technical Requirement 29, "Boration Systems Reference Changes"

UFCR No. 05-003; dated 1/25/05, "Inadvertent Operation of ECCS During Power Operation"

Safety Evaluations

04-002, Change to OS1023.57 to place Cable Spreading Room, Revision 8

05-002, SEPS Demonstration Test, Revision 0

03-004, Steam Generator LOLO Water Level Reactor Trip Setpoint Change, Revision 0

04-003, CST Inventory Depletion by EFW, Revision 0

02-005, Reduced ECCS Pump Head Requirements, Revision 0

02-001, UFSAR Methodology Change for Use of ICRP-30 Dose Conversion Factors, Revision 0

10 CFR 50.59 Screened-out Evaluations

05-001, Level Transmitter 1-RC-LIT-9467 Range Change, Revision 0  
05-636; Operation of the Letdown, Charging, and Seal Injection; Revision 0  
05-184; Change to TS Bases 3/4.7.1.2, Auxiliary Feedwater System; Revision 0  
04-515, Loss of Spent Fuel Cooling or Level, Revision 0  
05-082, Cooling Tower Portable Makeup Pump Operation, Revision 0  
04-152; Filling and Venting the Charging, Letdown, Seal Injection and Excess Letdown Portions of the CVCS; Revision 0  
04-294, Diesel Generator Room Average Annual Temperature Increase, Revision 0  
05-093; Change to TS Bases 3/4.7.4, Service Water System/Ultimate Heat Sink; Revision 0  
04-149, Service Water Pump Shaft Coupling Key Material Substitution, Revision 0  
05-037, CST Inventory Enhancements, Revision 0  
05-29, MSR Safety Valve Modifications, Revision 0  
04-41, DG-1B Main Bearing Temperature Monitoring and Lube Oil Strainer Pressure Indicator Replacement, Revision 0  
04-87, T.S. Bases Change #04-03, Revision 0

Audits and Self-Assessments

05-0099, dated 8/18/05, "Affects on Outstanding Design Changes on Equipment Reliability"  
05-0132, dated 11/9/05, "Digital Equipment Designs"  
04-0137, dated 11/24/04, "Red Lining of Design Documents"  
05-0111, dated 8/23/05, "Testing of Relief Valves Installed in Non-Standardized Configurations"  
05MMOD516, dated 9/26/05, "Thermal Camera Security Challenge Board Meeting Meetings"  
04DCR015, dated 2/28/06, "Challenge Board Actions"  
QRNO 04-0138, dated 12/13/04, "Temporary Modification and Alteration Program Assessment"  
QRNO 04-0064, dated 6/29/04, "Equipment Reliability Practices For Main Turbine EHC System"  
Self-Assessment 06-0010, dated 2/8/06, "Temporary Modification and Temporary Alteration," MA.3, Rev 17,  
Self-Assessment 04-0044, dated 5/7/04, Top 5 Engineering Workaround Items  
Seabrook Daily Quality Summary Reports (Design Control, Modifications, 50.59), dated January 2004 through February 2006  
Seabrook Nuclear Assurance Quality Report (QRNO 04-0094), Quality of 10CFR50.59 Screenings, dated 8/26/04  
Seabrook Nuclear Assurance Quality Report (QRNO 05-0117), 10CFR50.59 Screenings, dated 9/14/05

Calculations

C-S-1-57051, Pressurizer Level and Steam Generator Level Instrument Loop Accuracies and Setpoints, Revision 1  
C-S-1-28092, CST Minimum Volume, Revision 0  
SBC-792A Rev D1, Update of Seabrook Station NSSS Cooldown Study, Revision 2  
737-23, Startup Feedwater Pump NPSHA and Upstream Line Loss, Revision 2  
C-S-1-45765, SW-1821-F0604 Flaw Stability Evaluation, Revision 0  
9763-3-ED-00-66F, Control Circuit Voltage Drop, Revision 1  
C-S-1-45707, SW-1802-15 Temporary Non-Code Repair, Revision 3

Corrective Action Reports

02-11214, 02-12847, 04-01050, 04-01931, 04-03991, 04-04152, 04-05781, 04-06633, 04-08679, 04-08944, 04-10706, 04-11517, 05-00082, 05-00423, 05-00944, 05-01709, 05-03287, 05-07392, 05-09319, 05-09342, 05-11540, 05-13317, 05-13878, 05-14859, 06-00091, 06-00960, 06-01483, 06-01669, 06-02802\*, 06-02918, 06-02954\*, 06-03010\*, 06-03020\* , 06-03108\*, 06-03208\*

\*NRC Identified During Inspection

Drawings

1-CS-D20725, Chemical & Volume Control Charging System, Revision 24  
1-NHY 300219, dated 4/9/05, Service Environment Chart Sheet 222  
OS1016.07, Cooling Tower Fill Emergency Fill Diagram, Revision 7  
1-CO-B20426, Condensate System Detail, Revision 27  
1-CO-B20423, Condensate System Detail, Revision 13  
1-DM-D20349, Demineralized Water Distribution System Turbine Bldg, Revision 28  
1-FW-D20688, Emergency Feedwater System Details, Revision 17  
FP 52321, Condensate Storage Tank General Arrangement

Evaluations

EE-00-0007, Condensate Storage Tank Capacity & Licensing Basis, Revision 0  
02TMOD004 Temporary Modification Re-Evaluation dated 12/5/05  
05TMOD019 Temporary Modification Re-Evaluation, dated 1/4/06  
04TMOD009 Temporary Modification Re-Evaluation, dated 12/20/05  
MSE No. 04-070, Service Water Pump Shaft Coupling Material Substitution, Revision 0  
DCR 87-280, Start-Up Feed Pump Suction Pressure Trip, CA 001  
SS-EV-03-008, Risk Ranking of Maintenance Rule Functions from the SSPSS-2002, Revision 0

Miscellaneous

Risk-Informed Inspection Notebook For Seabrook Station, Revision 2  
Regulatory Guide 1.187; Guidance For Implementation of 10 CFR 50.59 , Changes, Tests, and Experiments, dated November 2000  
NEI 96-07, Guidelines For 10 CFR 50.59 Implementation, Revision 1  
Seabrook Station 10CFR505.59 Report, Revision 10 to the Seabrook Station Updated Final Safety Analysis Report (SBK-L-05208)  
Seabrook Station Facility Operating License NPF-86 Supplemental Response to Request for Additional Information Regarding License Amendment Request 04-03, Application for Stretch Power Uprate (SBK-L-05013); dated 1/28/05  
Specification No. 9763-006-238-23, Specification For Start-Up Feed Pumps, Revision 3  
DBD-EFW-01, Design Basis Document Emergency Feedwater System, Revision 5  
DBD-SW-01, Design Basis Document Service Water System, Revision 3  
FP 35322, ABB Surge Arrester Instruction Manual, dated 08/07/02  
ES04-01-02, Condensate Storage Tank Inventory Enhancement Test, dated 4/25/05

Modifications

02DCR011, 345kV SF6 Gas Insulated Surge Arrester Replacement  
94MMOD559, Switchyard Relaying Setpoint Revisions  
99MMOD0514, MSIV Main Dump Valve Modification

04MMOD514, UAT Cooling System Upgrade  
04DCR004, CST Inventory Enhancement  
04DCR017, VCT Isolation Valve Circuit Modification  
05MMOD505, Service Water Piping Repair

Procedures

5059RM, 10 CFR 50.59 Resource Manual, Revision 8  
NADC, Design Control Manual, Revision 33  
OS1402.01, Quarterly Unloaded Run of the PDP, Revision 4  
OS1023.57, Cable Spreading Area, Essential Switchgear Area and Electrical Tunnel Area Ventilation System Operation, Revision 8  
EX1804.031, Portable Tower Makeup Pump Operability 18 Month Surveillance Test, Revision 4  
MA 4.3, Temporary Modifications and Temporary Alterations, Revision 17  
ES04-01-02, Condensate Storage Tank Inventory Enhancement Test, Revision 0  
ON1034.03, Condensate System Operation, Revision 6  
ON1055.02, Operation of the Demineralized Water System, Revision 7  
ON1035.02, Startup Feedwater Pump Operation, Revision 8  
OS1027.01, Steam Generator Filling, Revision 6  
OX1436.05, Startup Feed Pump 18 Month Operability Surveillance, Revision 4

Station Operation Review Committee (SORC) and Company Nuclear Review Board (CNRB)

CNRB Seabrook Subcommittee Meeting No. 9 (LIC#05004), dated 3/1/05  
CNRB Seabrook Subcommittee Meeting No. 10 (LIC#05008), dated 5/29/05  
CNRB Seabrook Subcommittee Meeting No. 11 (LIC#05017), dated 9/6/05  
CNRB Seabrook Subcommittee Meeting No. 12 (LIC#05044), dated 11/28/05  
CNRB Seabrook Subcommittee Meeting No. 13 (LIC#06014), dated 3/13/06  
Minutes of Station Operation Review Committee Meeting 04-044, dated 9/20/04  
Minutes of Station Operation Review Committee Meeting 04-049, dated 10/18/04  
Minutes of Station Operation Review Committee Meeting 05-001, dated 1/25/05

Work Orders

0224561, 0229614, 0232104, 0232107, 0235219, 0235221, 0317738, 0327593, 0327594,  
0334778, 0334916, 0342253, 0402864, 0402877, 0405953, 0418677, 0420487,  
0422522, 0422586, 0422587, 0424339, 0441157, 0501714, 0501715, 0511095,  
0512910, 0523361,  
0542480

**Section 1R06: Flood Protection Measures, Section 1R15: Operability, and Section 1R19:  
Post Maintenance Tests**

Documents

Control Building Floor Plan El. 50' 0", Drawing CB 201  
Control Building Floor Plan El. 50' 0", Drawing CB 202  
Seabrook Nuclear Station Seismic Gap Fire Seal Evaluation, July 14, 2004  
Engineering Assessment of Inadvertent Cable Spreading Room Deluge Actuation, Feb. 2006  
DBD-PB-1, "Design Bases Document Plant Barriers," Revision 1  
Seabrook Cable Spreading Room Floor Penetration Evaluation, March 2006

UFSAR Section 9.3.3.3 and Section 3.4

Seabrook Nuclear Station Seismic Gap Fire Seal Evaluation, July 14, 2004

MX0599.02, "18 Month Inspection of Technical Requirement Fire Rated Assembly Penetration Seals," Revision 1

MA 5.7, "Station Barriers, Penetration Seals, and Fire Barrier Wrap," Revision 5

CRs 06-03129, 06-03128, 06-01343, 06-01306, 06-01416, 06-02443, 04-04687

Work Order 0604368

Calculation C-S-1-69042, Evaluation of Cable Spreading Room Floor Drains, Revision 0

A Selection of Fire Penetration Inspection Results from Feb. 2004 through Feb. 2006

### **Section 20S1: Access to Radiologically Significant Areas**

#### Procedures

HD0955.19, "Use of the Model 81 Shepard Beam Irradiator," Revision 7

HD0958.03, "Personnel Survey and Decontamination Techniques," Revision 23

HN0958.13, "Generation and Control of Radiation Work Permits," Revision 26

HD0958.17, "Performance of Routine Radiological Surveys," Revision 12

HD0958.19, "Evaluation of Dosimetry Abnormalities," Revision 27

HN0958.25, "High Radiation Area Controls," Revision 26

HD0958.30, "Inventory and Control of Locked or Very High Radiation Area Keys and Locksets," Revision 23

HD0958.48, "Health Physics Job Coverage Using Remote Monitoring," Revision 2

HD0958.51, "Health Physics Issuance of Stop Work Orders," Revision 0

HD0992.02, "Issuance and Control of Personnel Monitoring Devices," Revision 28

HN0958.30, "Inventory and Control of Locked or Very High Radiation Area Keys and Locksets," Revision 23

HN0958.39, "Multi-Badge Control & Exposure Tracking," Revision 4

RP 2.1, "General Radiation Worker Instruction and Responsibilities," Revision 18

RP 3.1, "Radiological Qualification Requirements," Revision 18

RP 4.1, "Requirements for Issuing Personnel Dosimetry," Revision 19

RP 5.1, "Annual Occupational Exposure Control and Increased Radiation Exposure Approval," Revision 16

RP 9.1, "RCA Access/Egress Requirements," Revision 21

RP 9.2, "Radiological Access Requirements to Containment Area" Revision 8

RP 13.1, "Radiological Controls for Materials," Revision 20

RP 13.2, "Storage of Highly Radioactive Material in the Reactor Cavity or Spent Fuel Pool," Revision 5

RP 15.1, "Job Pre-Planning and Review for Radiation Exposure Control," Revision 18

RP 15.2, "ALARA Recommendations," Revision 9

RP 15.4, "Use and Control of Temporary Shielding," Revision 11

OE 3.6, "Condition Reports," Revision 5

ON1090.04, "Containment Entry," Revision 3

#### ALARA Evaluations :

Replace Diaphragm on CS-V-312

Remove/replace insulation, clean, swipe, and perform VT-1 inspection on CS piping

Inspect/Laser map Containment (-) 26' elevation to support CBS Sump Protective Barrier Mod

Quality Assurance Reports:

Daily Quality Summary Reports for the period 12/01/2005 through 1/15/2006

Condition Reports:

06-00071, 06-00268, 06-00395, 06-00423, 05-14277, 05-14822, 05-14852, 05-15022, 05-15168, 05-15077

Radiation Safety Committee Meeting Minutes

Meeting Nos. 05-07, 05-06, 05-05, 05-04, 05-04, 05-03, 05-02

Miscellaneous

2005 Radiation Protection Department Continuous Improvement Initiative

Training Materials - Sentinel Access Control System

Risk-Informed Inspection Notebook For Seabrook Station, Revision 2

Regulatory Guide 1.187; Guidance For Implementation of 10 CFR 50.59, Changes, Tests, and Experiments, dated November 2000

NEI 96-07, Guidelines For 10 CFR 50.59 Implementation, Revision 1

Seabrook Station 10CFR50.59 Report, Revision 10 to the Seabrook Station Updated Final Safety Analysis Report (SBK-L-05208)

Seabrook Station Facility Operating License NPF-86 Supplemental Response to Request for Additional Information Regarding License Amendment Request 04-03, Application for Stretch Power Uprate (SBK-L-05013); dated 1/8/05

Specification No. 9763-006-238-23, Specification For Start-Up Feed Pumps, Revision 3

DBD-EFW-01, Design Basis Document Emergency Feedwater System, Revision 5

DBD-SW-01, Design Basis Document Service Water System, Revision 3

FP 35322, ABB Surge Arrester Instruction Manual, dated 08/07/02

ES04-01-02, Condensate Storage Tank Inventory Enhancement Test, dated 4/25/05

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CNRB	Company Nuclear Review Board
CR	Condition Report
CST	Condensate Storage Tank
CVCS	Chemical & Volume Control System
DCR	Design Change Request
EAH	Enclosure Air Handling
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
HRA	High Radiation Areas
ICRP	International Commission on Radiological Protection

IMC	Inspection Manual Chapter
IST	Inservice Testing
LER	Licensee Event Report
MMOD	Minor Modification
MSE	Maintenance Support Evaluation
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
OE	Operating Experience
PARS	Publicly Available Records
PM	Preventative Maintenance
PMT	Post-maintenance Testing
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RWP	Radiation Work Permit
SDP	Significance Determination Process
SE	Safety Evaluation
SEPS	Supplemental Emergency Power System
SORC	Station Operation Review Committee
SW	Service Water
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VCT	Volume Control Tank
VHRA	Very High Radiation Areas
WO	Work Order