

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION I 475 ALLENDALE ROAD KING OF PRUSSIA, PENNSYLVANIA 19406-1415

February 9, 2010

Mr. Paul Freeman Vice President, North Region Seabrook Nuclear Power Plant NextEra Energy Seabrook, LLC c/o Mr. Michael O'Keefe P.O. Box 300 Seabrook, NH 03874

SUBJECT: SEABROOK STATION, UNIT NO. 1 - NRC INTEGRATED INSPECTION REPORT 05000443/2009005

Dear Mr. Freeman:

On December 31, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station, Unit No. 1. The enclosed report documents the inspection findings discussed on January 12, 2010, with you and other members of your staff.

These inspections 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.

The report documents one licensee-identified violation that was determined to be of very low safety significance. However, because of the very low safety significance and because the issue was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent 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 Inspectors at the Seabrook Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspectors at the Seabrook Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305. P. Freeman

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

Sincerely,

Arthur L. Burritt, Chief Projects Branch 3 Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000443/2009005 w/ Attachment: Supplemental Information

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P. Freeman

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Sincerely, /RA/ Arthur L. Burritt, Chief Projects Branch 3 Division of Reactor Projects

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-443
License No.:	NPF-86
Report No.:	05000443/2009005
Licensee:	NextEra Energy Seabrook, LLC
Facility:	Seabrook Station, Unit No.1
Location:	Seabrook, New Hampshire 03874
Dates:	October 1, 2009 through December 31, 2009
Inspectors:	 W. Raymond, Senior Resident Inspector J. Johnson, Resident Inspector R. Moore, Reactor Inspector D. Silk, Senior Reactor Engineer S. Chaudhary, Reactor Inspector T. Burns, Reactor Inspector T. A. Moslak, Health Physicist G. Johnson, Reactor Engineer
Approved by:	Arthur Burritt, Chief Projects Branch 3 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000443/2009005; 09/30/2009-12/31/2009; Seabrook Station, Unit No. 1; Routine Integrated Report.

The report covered a three-month period of inspection by resident and regional specialist inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No findings of significance were identified.

Other Findings

A violation of very low safety significance, which was identified by NextEra, has been reviewed by the inspectors. Corrective actions taken or planned by NextEra have been entered into NextEra's corrective action program. This violation and the corrective action tracking number are listed in Section 40A7 of this report.

REPORT DETAILS

Summary of Plant Status

Seabrook, Unit No. 1 (Seabrook) was shutdown for a planned refueling outage that began on October 1, 2009. NextEra (NE) completed refueling, testing and maintenance activities during the outage. This included loading new fuel in the reactor, inspecting reactor vessel welds, inspecting the steam generators, and installing new components in the 345KV electrical switchyard. The reactor was taken critical on November 9, and the generator was synchronized to the grid. Seabrook operated at 65 percent power pending an evaluation of main turbine torsional vibrations and was shutdown to cold shutdown on December 6 to replace the A low pressure turbine rotor. Seabrook reactor was taken critical on December 16, 2009, and the generator was connected to the grid on December 17. The generator was periodically removed from the grid from December 17 to 23 to balance the turbine. The generator was synchronized to the grid on December 23 and the unit returned to 100 percent power on December 26, 2009. Seabrook operated at full power for the remainder of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1R01 Adverse Weather Preparation (71111.01 – 1 sample)

- .1 Readiness for Seasonal Extreme Weather Conditions
- a. Inspection Scope

The inspectors completed one seasonal extreme weather conditions inspection sample. The inspectors assessed NextEra readiness for the onset of cold weather conditions. The inspectors reviewed the updated final safety analysis report (UFSAR) descriptions for related design features and verified the adequacy of the station procedures for adverse weather protection. The inspectors reviewed NextEra actions per procedure ON1490.09 for seasonal readiness, and procedure OS1200.03 for severe weather. The inspectors also conducted walkdowns of susceptible systems, specifically the service water, emergency feedwater and 4 KV electrical systems. The inspectors reviewed deficiencies related to extreme weather preparation and verified the issues were entered into the corrective action program. The references used for this review are listed in the Attachment.

b. Findings

No findings of significance were identified.

- 1R04 Equipment Alignment (71111.04 4 samples, 71111.04S 1 sample)
- .1 Partial Walkdown
- a. Inspection Scope

The inspectors completed four partial system walkdown inspection samples for the plant systems listed below. The inspectors verified that valves, switches, and breakers were correctly aligned in accordance with Seabrook's procedures and that conditions that could affect system operability were appropriately addressed. The inspectors reviewed applicable piping and instrumentation drawings and system operational lineup procedures. Documents reviewed for this inspection are listed in the Attachment.

- B service water (SW) aligned to the cooling tower on October 20, 2009, during the planned unavailability of the A SW system;
- Reactor vessel cooling, makeup supplies and vessel level monitoring on October 31, 2009, during operations in mid-loop;
- Residual heat removal (RHR) on October 2-3, 2009, for the planned initiation of shutdown cooling and use for low temperature over pressure protection; and
- RHR on November 5-6, 2009, following re-alignment for use as an emergency core cooling system in standby.

b. <u>Findings</u>

No findings of significance were identified.

.2 <u>Complete Walkdown</u>

a. Inspection Scope

The inspectors performed a complete system walkdown inspection of the chemical and volume control system (CVCS-safety injection) to verify the system was properly aligned and capable of performing its safety function. To ascertain the required system configuration, the inspectors reviewed plant procedures, system drawings, the UFSAR, and the TS. The inspectors walked down the accessible portions of the system to verify overall material condition; that valves were correctly positioned; that electrical power was available; that major system components were properly labeled; that essential support systems were operational; and that ancillary equipment or debris did not interfere with system performance. The inspectors reviewed applicable piping and instrumentation drawings and system operational lineup procedures. Documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

- 1R05 Fire Protection (71111.05Q 6 samples)
- .1 Quarterly Review of Fire Areas:
- a. Inspection Scope

The inspectors completed six quarterly fire protection inspection samples. The inspectors examined the areas of the plant listed below to assess: the control of transient combustibles and ignition sources; the operational status and material condition of the fire detection, fire suppression, and manual fire fighting equipment; the

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material condition of the passive fire protection features; and the compensatory measures for out-of-service or degraded fire protection equipment. The inspectors verified that the fire areas were maintained in accordance with applicable portions of Fire Protection Pre-Fire Strategies and Fire Hazard Analysis. Documents reviewed are listed in the Attachment.

- C-F-3-Z (Containment 25 ft)
- C-F-1-Z (Containment (-) 26 ft)
- C-F-2-Z (Containment 0 ft)
- FSB-F-1-A (Fuel Storage Building 7 ft, 10 ft, and 21 ft)
- PAB-F-2C-Z (Primary Auxiliary Building 25 ft)
- PAB-F-3A-Z (Primary Auxiliary Building 53 ft)

b. Findings

No findings of significance were identified.

1R06 <u>Flood Protection Measures</u> (71111.06 - 1 sample)

a. Inspection Scope

The inspectors completed one flood protection measures inspection sample. The inspectors reviewed the flood protection measures designed to protect safety and risk significant systems from the effects of flooding. The inspectors reviewed NextEra's program to inspect cables located in underground vaults. The inspectors accompanied NextEra personnel to observe cable vault conditions for water submergence; material condition of splices and support structures; and, the operation and effectiveness of dewatering activities. The inspectors observed inspections of cable vaults, including Vault W05 that contained cables for safety related service water pumps SW-P-41A and SW-P-41C. The inspectors also performed tours of the selected areas to verify that asfound equipment and conditions were consistent with the design basis documents. Documents reviewed for this inspection are listed in the Attachment.

b. <u>Findings</u>

See section 4OA7 of this report for a discussion of one licensee-identified violation related to this inspection area.

1R07 <u>Heat Sink Performance</u> (71111.07A - 1 sample)

a. Inspection Scope

The inspectors completed one heat sink performance inspection sample. Specifically the inspectors reviewed the performance of the A closed cooling water heat exchanger to verify that the heat exchanger could fulfill its design function. The inspectors reviewed thermal performance monitoring (WO 0509597), trending data for heat exchanger temperatures and fouling factors, and ES1850.017, "SW Heat Exchanger Program." The inspectors interviewed the system engineer to evaluate the process used to monitor the heat exchanger and commitments in Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The inspectors conducted system walk

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downs and reviewed condition reports to verify that issues associated with the heat exchanger were identified and corrected.

b. <u>Findings</u>

No findings of significance were identified.

1R08 Inservice Inspection (71111.08 - 1 sample)

a. Inspection Scope

The purpose of this inspection was to review and assess the effectiveness of the NextEra's Inservice Inspection (ISI) program for monitoring degradation of the reactor coolant system (RCS) boundary, risk significant piping system boundaries, and the containment boundary. The inspectors reviewed the inservice inspection activities using the criteria specified in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI and applicable NRC regulatory requirements.

The inspectors selected a sample of non-destructive examination (NDE) activities to verify compliance with the requirements of ASME Section XI. The inspectors also reviewed selected samples of completed non-destructive examination procedures and inspection test reports to verify compliance with the ASME Code, Section XI. The inspectors selected samples included modification, repair and replacement activities that involved use of the welding process on pressure boundary risk significant systems. The sample selection was based on the inspectors reviewed examination procedures, procedure and personnel qualifications and examination test results. The inspectors also reviewed samples of examination reports and eleven condition reports (CR) initiated during ISI examinations to evaluate NextEra's effectiveness in the identification and resolution of problems.

The inspectors reviewed the procedures used to perform visual examinations for indications of boric acid leaks from pressure retaining components including the vessel upper head penetrations and their connections to the drive mechanisms. The inspectors reviewed the test results of these examinations and performed an inspection walkdown of the zero and -26 foot elevations to evaluate the effectiveness of the boric acid corrosion control exams performed by NextEra. The inspectors reviewed a sample of test reports and condition reports initiated as a result of these inspections. The inspectors reviewed selected CR's that identified both active and inactive leak locations that could result in degradation of safety significant components. The inspectors reviewed samples of operability evaluations, engineering evaluations and corrective actions provided for active and inactive boric acid leaks and verified that they were consistent with the requirements of the ASME Code and 10 CFR 50, Appendix B, Criterion XVI, Corrective Action.

The inspectors observed the performance of three NDE activities in process and reviewed documentation and examination reports for an additional three nondestructive examinations. Non-destructive test processes inspected included visual (VT), magnetic particle (MT), radiographic (RT), penetrant (PT), eddy current (ECT), and ultrasonic (UT) testing.

Examinations Inspected:

- UT of weld CS 0355-01 29, charging system, drawing 1- Y-800355 ISI, examination procedure ES 03-01-22.
- PT test of weld SI 0272-09 03, safety injection (SI) system, drawing 1-NHY-800272 ISI, examination procedure ES 1807.002.
- MT test of weld RCE-10 Pressurizer SKIRT, Reactor Coolant, integrally welded attachment, drawing 1-NHY-650006 ISI, examination procedure ES 1807.003.
- RT of field welds F0201, F0209 and F0210, butt welds of RHR system piping, drawing EC 145123-2000.
- ECT of steam generator tubes in SG A (tube R49C67), C (tube R51C51, R48C96, R27C61) and D (R46C51).
- VT of reactor pressure vessel bottom mounted instrument penetrations

The inspectors interviewed the inservice inspection program engineer to assess the scope of containment boundary examinations and the extent of management over-sight for the activity during this outage. The inspectors performed a walk-down of portions of the containment liner on the 0 ft, 25 ft and - 26 ft elevations to inspect the condition of the coating on the primary containment liner including the lowest intersection of the containment wall with the floor. The evaluation was performed to determine if evidence of mechanical damage or leakage was apparent. The inspectors observed no notable mechanical damage or indication of leakage during the performance of this ASME Section XI Section IWE evaluation. The inspectors reviewed examination reports and condition reports initiated as a result of NextEra's examination of the liner and coating performed during this outage. Corrective action specified for conditions identified were evaluated by the inspectors to verify that the engineering organization was involved in providing evaluation and disposition.

The inspectors reviewed the steam generator (SG) Degradation Assessment (DA) to verify that NextEra had reviewed and incorporated the results of the previous outage Degradation Assessment, Operational Assessment (OA) and Condition Monitoring (CM) Assessment. The inspectors reviewed these assessments to confirm that the proper inspection scope was planned and performed during this outage. The inspectors also selected three ECT examination technique specification sheets (ETSS) to verify that the examination techniques applied were qualified for the detection of degradation mechanisms identified during the assessment completed for this outage. The inspectors reviewed the test data for a sample of tubes that exceeded the acceptance criteria for wall thinning. These tubes were subsequently removed from service by "plugging" and the tube inspection sample was increased in accordance with the expansion plan. The inspectors verified the expanded sample was completed and that no additional tubes that exceeded the acceptance criteria were identified.

The inspectors reviewed documentation for two rework/repair activities that required the development of an ASME Section XI repair plan with the use of welding processes to complete the repair. The work requests (WR) that detailed these repair/replacement activities were:

 WR 00625947 01, Remove and Replace service water flanged pipe reducer on discharge of service water pump 1-SW-P-41-A. Replacement of service water spool piece SW-1801, Drawing MSE-080230-2001, field welds #F1012, 1013, 1014 and 1015 were required.

 WR 00628168 Removal and replacement of RHR thermal mixing "tee" and associated pipe. Field welds F0201, 0209, and 0210 were required for fabrication and installation in line #1-RH-158-02-601-8 shown on Sketch EC 145123-2000.

The inspectors reviewed the ASME Section XI repair plans, replacement material, weld procedure specifications and qualifications, welder qualifications, weld filler metals, non-destructive tests acceptance criteria and post work testing for each activity, as applicable.

b. <u>Findings</u>

No findings of significance were identified.

- 1R11 <u>Licensed Operator Requalification Program</u> (71111.11Q 1 sample, 71111.11A 1 sample)
- .1 Quarterly Resident Inspectors Review
- a. Inspection Scope

The inspectors completed one quarterly licensed operator requalification program inspection sample. Specifically, the inspectors observed simulator examinations of licensed operators on November 17, 2009, for scenarios involving transients and design basis events. The inspectors reviewed operator actions to implement the abnormal and emergency operating procedures. The inspectors examined the operators' ability to perform actions associated with high-risk activities, the Emergency Plan, previous lessons learned items, and the correct use and implementation of procedures. The inspectors observed and reviewed the training evaluator's critique of operator performance and verified that deficiencies were adequately identified, discussed, and entered into the corrective action program. The inspectors reviewed the simulator's physical fidelity in order to verify similarities between the Seabrook control room and the simulator. Documents reviewed are listed in the Attachment.

b. <u>Findings</u>

No findings of significance were identified.

- .2 Annual Regualification Examination Review
- a. Inspection Scope

The following inspection activities were performed using NUREG 1021, Rev. 9, "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure Attachment 7111111, "Licensed Operator Requalification Program," Appendix A "Checklist for Evaluating Facility Testing Material," Appendix B "Suggested Interview Topics," and Appendix C "Checklist for Evaluating Plant-Referenced Simulators Operating Under 10 CFR 55.46(c) AND (d)." A review was conducted of recent operating history documentation found in inspection reports, licensee event reports, and NextEra's corrective action program. The inspectors also reviewed specific events from the corrective action program that indicated possible training deficiencies, to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operator' performance.

The operating tests for the week of December 14, 2009, were reviewed for quantitative attributes and overall quality. Observations were made of the dynamic simulator examinations and job performance measures (JPM) administered during the week of December 14, 2009. These observations included facility evaluations of crew and individual performance during the dynamic simulator scenario examinations and individual performance of five JPMs. In-office reviews of the written examinations for Crews C, D, and F were conducted to verify compliance with the guidance of NUREG-1021. Operating and written examination test items were reviewed to verify an acceptable level of overlap to ensure overall examination integrity.

On December 29, 2009, the results of the annual operating tests and the written examinations for 2009 were reviewed to confirm that pass fail rates were consistent with the guidance of NUREG-1021, Revision 9, "Operator Licensing Examination Standards for Power Reactors" and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP). The review verified the following:

- Crew pass rates were greater than 80%. (Pass rate was 100%)
- Individual pass rates during the simulator examinations were greater than 80%. (Pass rate was 100%)
- Individual pass rates on the job performance measures of the operating exam were greater than 80%. (Pass rate was 97.9 %)
- Individual pass rates on the written exam were greater than 80%. (Pass rate was 100%)
- More than 75% of the individuals passed all portions of the exam. (The overall requalification examination pass rate was 97.9%)

The remediation plans for one individual's performance deficiencies were also reviewed to assess the effectiveness of the remedial training.

Eight SRO license activations were reviewed to ensure that 10 CFR 55.53 license conditions and applicable program requirements were met. Also, watch standing records were verified for four staff SRO licenses. A sample of ten individual and medical examinations/records was reviewed for compliance with license conditions, including NRC regulations.

Two operators (one reactor operator and one senior reactor operator) and four instructors were interviewed for feedback on their training program and the quality of training received. Also, trainee comments and the associated responses were reviewed for training in phases 0803 and 0904 to assess the training feedback process.

Simulator performance and fidelity were observed during the administration of JPMs and simulator scenario examinations during the week of December 14, 2009. A recent control room modification was compared with the associated simulator modification to

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assess fidelity. Simulator testing records were reviewed against the guidance in ANSI/ANS-3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination."

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 3 samples)

a. Inspection Scope

The inspectors completed three maintenance effectiveness inspection samples. The inspectors reviewed performance-based problems or completed performance and condition history reviews involving selected in-scope structures, systems or components (SSCs) to assess the effectiveness of the maintenance program. Reviews focused on: proper Maintenance Rule (MR) scoping in accordance with 10 CFR 50.65; characterization of reliability issues; tracking system and component unavailability; 10 CFR 50.65 (a)(1) and (a)(2) classifications; identifying and addressing common cause failures, trending key parameters, and the appropriateness of performance criteria for SSCs classified (a)(2) as well as the adequacy of goals and corrective actions for SSCs classified (a)(1). The inspectors reviewed system health reports, maintenance backlogs, and MR basis documents. Other documents reviewed for the inspection are listed in the Attachment. The following samples were reviewed:

- Supplemental emergency power system maintenance rule (a)(2) classification, with a focus on engine and electrical and control system performance (AR197779, 197884)
- ED-4/13.8 kV Vac system maintenance rule (a)(2) classification, with a focus on breaker performance and corrective actions to address blocking diodes (AR191631, 014356)
- Main steam system maintenance rule (a)(2) classification, with a focus on main steam isolation performance (AR 202606, 202630).

b. Findings

No findings of significance were identified.

1R13 <u>Maintenance Risk Assessments and Emergent Work Control</u> (71111.13 - 7 samples)

a. Inspection Scope

The inspectors completed seven maintenance risk assessment and emergent work control inspection samples. The inspectors reviewed the scheduling and control of planned and emergent work activities in order to evaluate the effect 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," Revision 0 and Work Management Manual 10.1, "On-Line Maintenance," Revision 5. Specific risk assessments were conducted using Seabrook's "Safety Monitor."

Documents reviewed are listed in the Attachment. The inspectors reviewed the maintenance items listed below.

- Planned work associated with 345 kV Line 394 outage, relay room work and switchyard modifications with commissioning of Bus 5 per 09DCR002, WO 01195817
- Emergent work associated with service water system pipe liner defects and repair per WO 00628145 and 00628148 (AR207412)
- Emergent work associated with the B RHR mixing-T pipe defect and repair per WO 00628128 (AR206338)
- Emergent work associated with service water system pipe through wall leak and repair per WO 01198488 and 94002507 (AR209078)
- Emergent work associated with the mechanical stress improvement application for the reactor vessel nozzle at azimuth 158 degrees per WO 01198476 (EC145179)
- Planned work associated with emergency bus 1-EDE-SWG-5 including availability of opposite train protected and guarded equipment per WO 1169163
- Planned work to replace SW-P-41A pump and motor per WO 1189955 during plant operation on the cooling tower

b. <u>Findings</u>

No findings of significance were identified.

- 1R15 Operability Evaluations (71111.15 4 samples)
- a. Inspection Scope

The inspectors completed four operability evaluation inspection samples. The inspectors reviewed operability evaluations and condition reports to verify that identified conditions did not adversely affect safety system operability or overall plant safety. The evaluations were reviewed using criteria specified in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance formerly contained in NRC Generic Letter 91-18, Information to Licensees Regarding two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability" and Inspection Manual Part 9900, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety. " In addition, where a component was determined to be inoperable, the inspectors verified that TS limiting condition for operation implications were properly addressed. Documents reviewed are listed in the Attachment. The inspectors also performed field walk downs and interviewed personnel involved in identifying, evaluating or correcting the identified conditions. The following items listed below were reviewed.

- CR206338, RHR system acceptability for operation following identification of a flaw on line RH-158-02-601-8
- CR207352, containment building spray (CBS) system acceptability for operation following identification of a flaw on line CBS-1210-11-601-12
- CR207921, acceptability of core reload per TS 3.4.10 following flaw identification on reactor vessel nozzle at azimuth 158 degrees and evaluation per ASME Section XI IWB3640

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- CR209357, service water system acceptability for operation following identification of through wall leak on pipe SW-1827-1-153 (SW-S10)
- b. Findings

No findings of significance were identified.

- 1R18 Plant Modifications (71111.18 2 samples)
- .1 Permanent Modifications
- a. Inspection Scope

The inspectors completed one plant modification inspection sample. The inspectors reviewed the design change package for the switchyard reliability project upgrade. This modification improved the switchyard by adding new 345 kV breakers and providing a supply to the reserved auxiliary transformer from 345 kV Buses 1 and 3. The inspectors verified that the design bases, licensing bases, and performance capability of the 345 kV system was not degraded by the modification. The inspectors also verified that the new configuration was accurately reflected in the design documentation, and that post-modification testing was adequate to ensure that the affected structures, systems, and components would function properly after modification installation. The inspectors interviewed plant staff, and reviewed issues entered into the corrective action program to verify that NextEra was effective at identifying and resolving problems associated with plant modifications. The 10 CFR 50.59 evaluation associated with the switchyard reliability project was also reviewed. Other documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Temporary Modifications

a. Inspection Scope

The inspectors completed one plant modification inspection sample. The inspectors reviewed a modification package for service water line SW-1814-1-156 and its seismic supports to verify that the design bases, licensing bases, and performance capability of the system was not degraded by the modification. The inspectors verified the new configuration was accurately reflected in the design documentation and that the post-modification testing was adequate to ensure the structures, systems, and components would function properly. The inspectors interviewed plant staff, and reviewed issues entered into the corrective action program to determine whether NextEra was effective at identifying and resolving problems associated with temporary modifications. The 10 CFR 50.59 evaluation associated with this temporary modification was also reviewed. The documents used in this review are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 9 samples)

a. Inspection Scope

The inspectors completed nine post-maintenance testing (PMT) inspection samples. The inspectors observed portions of PMT activities in the field to verify the tests were performed in accordance with the approved procedures. The inspectors assessed the test adequacy by comparing the test methodology to the scope of maintenance work performed. The inspectors evaluated established test acceptance criteria to verify that the reviewed test procedures ensured that systems and components satisfied applicable design, licensing bases and technical specification (TS) requirements. The inspectors also reviewed the recorded data to confirm applicable acceptance criteria were satisfied during testing. Documents reviewed are listed in the Attachment. The activities reviewed are listed below.

- Retest following the modification of A diesel generator lube oil temperature control valve 1-DG-V-29B on October 02, 2009, WO 00626428
- Retest of emergency feedwater (EFW) flow control valve FW-FV-4244-A following planned maintenance on October 12, 2009, WO1169500
- Retest of reactor and turbine trip functions as part of the turbine digital electrohydraulic control (DEHC) site acceptance testing on November 1-25, 2009, WO 01189548
- Retest of Charging Pump 1-CS-P-2-A following motor replacement on October 31, 2009, WO 628996
- Retest following maintenance on vital inverter 1-EDE-I-1-A-01 on October 31, 2009, WO 1168951
- Post work test for RHR valve 1-RH-V-14 following replacement of thermal overload protection on October 22, 2009, WO 1170564
- Retest following maintenance on the reactor trip breakers on November 2, 2009, WO 1168210
- Retest following maintenance on Feedwater valve FW-FV-4234B to repair actuator oil leak on October 26, 2009, WO 1189131
- Retest following repair of the B RHR line 1-RH-158-02 on November 5, 2009, WO 628168

b. <u>Findings</u>

No findings of significance were identified.

1R20 <u>Refueling and Outage Activities</u> (71111.20 - 2 samples)

- .1 <u>Refueling Outage OR13</u>
- a. Inspection Scope

The inspectors completed one refueling and outage activities inspection sample. The inspectors reviewed the operational, maintenance, and testing activities for the thirteenth refueling outage (OR13) starting on October 1, 2009. The references used to this inspection are listed in the Attachment.

Review of Outage Plan

The inspectors reviewed the outage plans to evaluate NextEra's ability to assess and manage the outage risk. The inspectors reviewed the outage risk assessment provided in Engineering Evaluation EE-09-007.

Monitoring of Plant Shutdown and Cooldown Activities

The inspectors reviewed NextEra action to shut the plant down in accordance with plant procedures. The inspectors observed completion of various activities required to place the plant in a cold shutdown condition to assess operator performance, communications, command and control and procedure adherence. The inspectors reviewed operator adherence to TS required cooldown limits.

The inspectors also conducted inspection tours of plant areas not normally accessible during plant power operations to verify the integrity of structures, piping and supports, and to confirm that systems appeared functional.

Reactor Fuel Reload and Inspection Activities and Reactivity Control

The inspectors verified that refueling activities were conducted in accordance with procedures OS1000.09 and RS0721. The inspectors independently verified on a sampling basis that requirements for core alteration were met. The inspectors observed NextEra actions during core alterations to assure core reactivity was controlled. The inspectors observed activities from the control room, the reactor cavity and the spent fuel pool at various times. The inspectors verified that fuel movement was tracked in accordance with the fuel movement schedule. The inspectors verified NextEra action to meet the requirements of TS 3.9 for refueling operations, including the requirements for boron concentration and core monitoring using the source range monitors. The inspectors observed communications and coordination of activities between the control room and the refueling stations while fuel handling activities were in progress.

Outage Risk

The inspectors reviewed daily shutdown risk assessments during refueling outage OR13 to verify that NextEra addressed the outage impact on defense-in-depth for the critical safety functions: electrical power availability, inventory control, decay heat removal, reactivity control, and containment. The inspectors reviewed how NextEra provided adequate defense-in-depth for each safety function and implemented the planned contingencies in order to minimize overall risk where redundancy was limited or not available. The inspectors periodically reviewed risk updates accounting for schedule changes and unplanned activities.

Control of Heavy Loads

The inspectors reviewed NextEra's activities to control the lift of heavy loads in accordance with plant procedures and the commitments to NUREG 0612. The inspectors observed the lift preparations and lift activities to verify adherence to established procedures and controls. The inspectors used an operating experience smart sample as a reference for this review.

Clearance Activities and Configuration Control

The inspectors reviewed a sample of risk significant clearance activities and verified tags were properly hung and/or removed, equipment was appropriately configured per the clearance requirement, and that the clearance did not impact equipment credited to meet the shutdown critical safety functions.

Inventory Control

The inspectors reviewed NextEra actions to establish, monitor and maintain the proper water inventory in the reactor during the outage, and in the reactor and spent fuel pool after flooding the reactor cavity for refueling activities. The inspectors reviewed the plant system flow paths and configurations established for reactor makeup and reactivity control, and verified the configurations were consistent with the outage plan.

Reduced Inventory and Mid-Loop Conditions

The inspectors reviewed NextEra's procedures to implement commitments from Generic Letter 88-17 and confirmed, by sampling, that the controls were in place and adequate. The inspectors reviewed outage activities that were conducted during periods when there was a short time-to-boil to assure adequate controls were in place. Periodically, during the decreased inventory and mid-loop conditions, the inspectors verified that the configurations of the plant systems were in accordance with the commitments. During mid-loop operations, the inspectors observed NextEra's control of distractions to assure the operator could maintain the required reactor vessel level.

Foreign Material Exclusion

The inspectors reviewed the implementation of Seabrook procedures for foreign material exclusion control (FME) for the open reactor vessel, reactor cavity and spent fuel pool. The inspectors reviewed NextEra actions to verify that FME issues were documented and resolved.

Electrical Power

The inspectors verified that the status of electrical systems met TS requirements and the outage risk control plan. The inspectors verified that compensatory measures were implemented when electrical power supplies were impacted by outage work activities and that credited backup power supplies were available.

RHR System Monitoring

The inspectors observed spent fuel pool (SFP) and reactor decay heat removal system status and operating parameters to verify that the cooling systems operated properly. The review included periodic review of SFP and reactor cavity level, temperature, and RHR flow. The inspectors reviewed system status to verify the proper system alignment was established for vessel and cavity level measurement.

Containment Control

The inspectors reviewed NextEra activities during the outage to control primary containment closure and integrity, and to prepare the containment for closure prior to plant restart. The inspectors performed tours of all levels in the containment throughout the outage and prior to plant startup per procedure OS1015.18 to review NextEra's cleanup and demobilization controls in areas where work was completed to assure that tools, materials and debris were removed. This review focused on the control of transient combustibles and the removal of debris that could impact the performance of safety systems.

Monitoring Plant Heat up, Approach to Critical and Startup

The inspectors observed operator performance during the plant startup activities conducted between November 1 and 14, 2009. The inspection consisted of control room observations, plant tours and a review of the operator logs, plant computer information, and station procedures. The inspectors observed pre-job briefs for key

evolutions. The inspectors reviewed the preparations for changes in operating modes. The reactor was taken critical on November 9 at 2:16 a.m., and entered operational Mode 1 at 8:13 a.m. The inspectors verified, on a sampling basis, that TS, license conditions, and other requirements for mode changes were met. The inspectors verified RCS integrity throughout the restart process by periodically reviewing RCS leakage calculations and by review of systems that monitor conditions inside the containment.

Problem Identification and Resolution

The inspectors verified that NextEra was identifying outage related issues and had entered them into the corrective action program. The inspectors also reviewed a sample of the corrective actions to verify they were appropriate to resolve the identified issues.

b. <u>Findings</u>

No findings of significance were identified.

.2 Maintenance Outage FO13

a. Inspection Scope

The inspectors completed one refueling and outage activities inspection sample. The inspectors reviewed the operational, maintenance, and testing activities for the forced outage (FO13) that started on December 6, 2009. The references used for this inspection are listed in the Attachment.

Monitoring of Plant Shutdown and Cooldown Activities

The inspectors reviewed NextEra action to shut the plant down in accordance with plant procedures. The inspectors observed completion of various activities required to place the plant in a cold shutdown condition to assess operator performance, communications, command and control and procedure adherence. The inspectors reviewed operator adherence to TS required cooldown limits.

Electrical Power

The inspectors verified that the status of electrical systems met TS requirements and the outage risk control plan. The inspectors verified that compensatory measures were implemented when electrical power supplies were impacted by outage work activities and that credited backup power supplies were available.

RHR System Monitoring

The inspectors observed reactor decay heat removal system status and operating parameters to verify that the cooling systems operated properly. The review included periodic review of RHR flow. The inspectors reviewed system status to verify the proper system alignment was established for reactor and pressurizer level measurement.

Monitoring Plant Heat up, Approach to Critical and Startup

The inspectors observed operator performance and reviewed plant startup activities conducted between December 14 and 26, 2009. The inspection consisted of control room observations, plant tours and a review of the operator logs, plant computer information, and station procedures. The inspectors observed pre-job briefs for key evolutions. The inspectors reviewed the preparations for changes in operating modes. The reactor was taken critical on December 16 at 5:25 p.m., and entered operational

Mode 1 at 11:17 p.m. The inspectors verified, on a sampling basis, that TS, license conditions, and other requirements for mode changes were met. The inspectors verified RCS integrity throughout the restart process by periodically reviewing RCS leakage calculations and by review of systems that monitor conditions inside the containment.

Problem Identification and Resolution

The inspectors verified that NextEra was identifying outage related issues and had entered them into the corrective action program. The inspectors reviewed a sample of the corrective actions to verify they were appropriate to resolve the identified issues.

b. Findings

No findings of significance were identified.

- 1R22 <u>Surveillance Testing</u> (71111.22 5 samples)
- a. Inspection Scope

The inspectors completed five surveillance testing inspection samples. The inspectors observed portions of surveillance testing activities for 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 TS 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 the system engineers and field operators. The test data recorded was compared to procedural and TS requirements, and to prior tests to identify adverse trends. The following surveillance activities were reviewed:

- EX1804.047, Reactor Coolant System Pressure Isolation Valve Leakage Rate Tests on October 22 and November 6, 2009;
- OX1405.13, Train A Safety Injection Comprehensive Pump Test on October 6, 2009;
- OX1401.02, RCS Leak Rate Calculation, on November 15-30, 2009;
- RS1748, Subcritical Physics Testing, on November 6-7, 2009; and
- OX1426.20/32, Diesel Generator 1A/1B 18 Month Operability and Engineered Safeguards Pump and Valve Response Time Testing, on November 2-5, 2009.

The inspectors reviewed deficiencies related to surveillance testing and verified that the issues were entered into the corrective action program. Documents reviewed for this inspection are listed in the Attachment.

b. <u>Findings</u>

No findings of significance were identified.

- 1EP6 <u>Drill Evaluation</u> (71114.06 1 sample)
- .1 <u>Annual Licensed Operator Regualification</u>
- a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. On November 17, 2009, the inspectors observed a drill from the control room simulator during annual licensed operator requalification training. The inspectors evaluated the drill performance relative to developing event classifications and notifications. The inspectors reviewed the Seabrook Emergency Initiating Condition Matrix. The inspectors referenced Nuclear Energy Institute 99-02, "Regulatory Assessment PI Guideline," Revision 5, and verified that NextEra correctly counted the drill's contribution to the NRC PI for drill and exercise performance.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

- 20S1 Access to Radiological Significant Areas (71121.01 11 samples)
- a. Inspection Scope

During the period October 19 - 22, 2009, the inspectors conducted the following activities to verify that NextEra was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas, and other radiological controlled areas (RCA) during the refueling outage (OR13), 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 TS, and NextEra's procedures.

This activity represents the completion of eleven samples relative to this inspection area.

Plant Walkdown and RWP Reviews

The inspectors identified exposure significant work areas in the containment building and primary auxiliary building (PAB) for ongoing outage activities. Tasks in the containment building included ECT of steam generator tubes, core barrel transfer to the reactor vessel, maintenance on valve CS-V-180, cavity decontamination in preparation for taking measurements of the B-hot leg reactor nozzle, and various support work including demobilization of steam generator tasks. Tasks in the PAB included weld repairs to B-RHR system mixing tee. 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 controlled areas located in the Containment Building, Primary Auxiliary Building, Decay Heat Vaults, Fuel Storage Building, and Waste Processing Building, with radiation protection supervision. The inspectors performed independent radiation surveys in these areas to confirm the accuracy of survey maps and the adequacy of postings and barricades.

In reviewing RWPs, the inspectors evaluated electronic dosimeter (ED) locations on personnel and dose/dose rate alarm set points to determine if ED placement was in the

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highest dose field and that the set points were consistent with the area radiological conditions 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 performed under selected RWPs.

Problem Identification and Resolution

The inspectors reviewed elements of NextEra's corrective action program related to controlling access to radiological controlled areas to determine if problems were entered into the program for resolution. The inspectors reviewed daily quality summaries, a radiation control program audit, and condition reports.

Additionally, the inspectors reviewed dose and dose rate alarm reports, personnel contamination event reports, whole body counting data, dose extension authorizations, and dosimetry abnormality occurrence reports to verify that causes were determined, for the incidents related to worker performance and contamination control, and that no relevant performance indicator or regulatory limit was exceeded.

Jobs-In-Progress

The inspectors observed aspects of various outage related tasks being performed during this inspection period to verify that radiological controls, such as required surveys, area postings, job coverage, air sampling 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 core barrel transfer, preparations for reactor cavity draindown/decontamination, steam generator ECT demobilization, and preparations for taking B-reactor hot leg nozzle measurements.

The inspectors evaluated the exposure mitigation requirements, specified in ALARA reviews (AR), and associated RWPs, and compared actual worker cumulative exposure to estimated dose for tasks associated with these work activities. Jobs reviewed included reactor vessel disassembly/reassembly (AR 09-01), steam generator ECT (AR 09-02), steam generator secondary side maintenance (AR 09-03), in-service inspections (AR 09-04), cavity decon (AR 09-05), valve maintenance (AR 09-07), scaffolding installation/removal (AR 09-11), and RHR mixing tee repairs (AR 09-13).

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

The inspectors discussed with the Radiation Protection Manager and senior technicians high radiation area (HRA) and very high radiation area (VHRA) controls and procedures. These special areas included under reactor vessel areas and spent fuel transfer routes in containment, spent resin sluicing paths and spent resin storage locations in the primary auxiliary building, and irradiated hardware stored in the spent fuel pool. The inspectors evaluated the pre-requisite 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 NextEra procedures did not substantially reduce the effectiveness and level of worker protection.

Keys to locked high radiation areas (LHRA) and VHRAs, maintained at the radiation protection main and alternate control points were inventoried, and accessible LHRAs were verified to be properly secured and posted during plant tours.

Radiation Worker/Radiation Protection Technician Performance The inspectors-observed radiation worker and radiation protection technician performance by attending various pre-job/RWP briefings, observing activities in progress, and questioning individuals regarding their knowledge of radiological controls and contamination control measures applied to their tasks when working in the RCA.

The inspectors reviewed conditions 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.

- 2OS2 ALARA Planning and Controls (71121.02 6 samples)
- a. Inspection Scope

During the period October 19 - 22, 2009, the inspectors conducted the following activities to verify that NextEra was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks conducted during the refueling outage (OR13). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and NextEra's procedures.

This inspection activity represents completion of six (6) samples relative to this inspection area.

Radiological Work Planning

The inspectors reviewed pertinent information regarding the site's cumulative exposure history, current exposure trends, and ongoing activities to assess current performance and exposure challenges. The inspectors determined the plant's 3-year rolling collective average exposure and concluded that the site is ranked in the top performance quartile for U.S. pressurized water reactors.

The inspectors reviewed the refueling outage work scheduled during the inspection period and the associated work activity exposure estimates. Scheduled work included steam generator tube eddy current testing (ECT), reactor core barrel transfer, reactor cavity draindown/decontamination, B RHR system mixing tee piping repairs, B reactor hot leg nozzle measurements and valve maintenance. As part of this review, the inspectors evaluated the dose estimates for these jobs and reviewed the associated ALARA Plans. The inspectors also reviewed the procedures associated with maintaining worker dose ALARA and with estimating and tracking work activity specific exposures.

The inspectors reviewed the daily OR13 Project Dose Summary Report that detailed the worker estimated and actual exposures through October 22, 2009, for jobs performed during the refueling outage.

The inspectors evaluated the departmental interfaces between radiation protection, operations, maintenance crafts, and engineering to identify missing ALARA program

elements and interface problems. The evaluation was accomplished by interviewing the Radiation Protection Manager and the ALARA Coordinator, reviewing Radiation Safety Committee meeting minutes, reviewing outage-related Nuclear Assurance Daily Quality Summary Reports, observing jobs-in-progress, and attending the pre-job briefing for reactor cavity decontamination.

The inspectors determined that work activity planning included the use of remote audio/video monitoring, temporary shielding, system flushes, relocation of isolated sources away from occupied work areas, and operational considerations to further minimize worker dose. In doing this evaluation, the inspectors reviewed temporary shielding requests, cavity decontamination pre-requisites, and shutdown chemistry requirements.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for the current annual collective exposure estimates for the operating cycle and refueling outage and compared this to actual exposure data. The inspectors reviewed NextEra's method for adjusting exposure estimates, and re-planning work, based on work progress.

The inspectors reviewed NextEra's exposure tracking system to verify that the level of dose tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support the control of collective and individual exposures. Included in review were electronic dose and dose rate alarm reports, daily dose reports for ongoing activities, and identification of the highest individual dose receptors.

Job Site Inspection and ALARA Control

The inspectors observed maintenance and operational activities being performed for steam generator tube ECT/tube plugging, reactor cavity decontamination, containment building demobilization, repairs to the B-RHR mixing tee, and preparations for taking measurements of the B reactor hot leg nozzle to verify that pre-requisite radiological controls were implemented and workers were knowledgeable of work area radiological conditions and ALARA practices.

Source Term Reduction Control

The inspectors reviewed the current status and historical trends of the site's source terms. Through interviews with the Chemistry Supervisor and Radiation Protection Manager, the inspectors evaluated the effectiveness of NextEra's source term control strategy. Specific strategies being employed by NextEra included post-shutdown peroxide flushes of the reactor coolant system, use of a macro-porous resin for coolant cleanup, use of submersible filtration systems for reactor cavity cleanup, relocating irradiated components away from work areas, and use of temporary shielding for various tasks.

Radiation Worker Performance

The inspectors observed radiation worker and health physics technician performance during core barrel transfer, cavity decontamination, and steam generator ECT at the centralized monitoring station. The inspectors determined whether the workers were aware of current radiological conditions, access controls, and that the skill level was sufficient with respect to effectively performing their tasks and implementing proper ALARA practices.

The inspectors attended the pre-job briefing for an exposure significant task, reactor cavity decontamination. The inspectors determined that roles and responsibilities were identified, that the sequencing of various activities were iterated, and that lessons learned from past cavity decontamination tasks were reviewed.

The inspectors reviewed condition reports, related to radiation worker and radiation protection technician errors, and personnel contamination reports (PCR) to determine if an observable pattern traceable to a similar cause was evident.

Declared Pregnant Workers

The inspectors determined that there were no declared pregnant workers performing outage related activities in the RCA during the inspection period.

b. <u>Findings</u>

No findings of significance were identified.

Cornerstone: Public Radiation Safety

- 2PS1 <u>Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems</u> (71122.01 3 samples)
- a. Inspection Scope

During the period December 7-10, 2009, the inspectors conducted the following activities to verify that NextEra was properly maintaining the gaseous and liquid processing systems to ensure that radiological releases were properly mitigated, monitored, and evaluated with respect to public exposure. Implementation of these controls was reviewed against the criteria contained in the 10 CFR 20 and 50, Technical Specifications, the site Off-site Dose Calculation Manual (ODCM), and NextEra's procedures. This inspection activity represents completion of three samples relative to this inspection area.

The inspectors reviewed the 2007 and 2008 Annual Radioactive Effluent Release Reports to verify that the effluent programs were implemented as required by the Off-site Dose Calculation Manual (ODCM). As part of this review, changes made to the ODCM were evaluated to determine if the changes affected NextEra's ability to maintain effluent doses as low as is reasonably achievable (ALARA).

The inspectors walked down the major components of the gaseous and liquid effluent monitoring systems, with a senior chemist, to verify that the system configuration complied with the FSAR description, and to evaluate equipment material condition. Radiation monitors inspected included the following:

Liquid Monitors:	RM-6521, Turbine Building Sump
	RM-6519, Steam Generator Blowdown Flash Tank
	RM-6473, Condenser Polisher
	RM-6515, Primary Component Cooling Water
	RM-6509, Liquid Radwaste

Gas Monitors:

RM-CP-510, Turbine Gland Seal Condenser Exhaust RM-6505, Condenser Air Removal RM-6503, Waste Gas Compressor Inlet RM-6504, Hydrogen Compressor Discharge RM-6528, Plant Vent (Wide Range Gas Monitor)

The inspectors reviewed the associated procedures and observed technicians collecting weekly air particulate, iodine and noble gas grab samples from the plant vent effluent radiation monitor and preparing a liquid waste discharge permit.

The inspectors reviewed the most current liquid and gaseous effluent monitor calibration results to verify that the instrumentation met the operability acceptance criteria, and that associated flow instruments and isolation valves were operable. Liquid monitor calibration data reviewed included the waste test tank (WTT) discharge flow isolation valves (1WL-FCV-1458-1/2), WTT radiation monitor (RM-6509), and the turbine building sump radiation monitor (RM-6521). Gaseous effluent instrumentation reviewed included the plant vent radiation monitor (RM-6528), condenser air evacuator (RM-6505), waste gas compressor monitor (RM-6503), and hydrogen gas compressor discharge monitor (RM-6504).

The inspectors reviewed the air cleaning system surveillance test results for HEPA (high efficiency particulate absolute) and charcoal filtration systems, to ensure the components met their acceptance criteria. The inspectors confirmed that the air flow rates were consistent with the ODCM values. Data reviewed included the containment recirculation filtration (1-CAH-F-8), containment air purge filtration (1-CAP-F-40), primary auxiliary building exhaust ventilation filtration (1-PAB-F-16), and fuel storage building cleanup filtration (1-FAH-F-41).

The inspectors reviewed selected liquid and gas discharge permits for recent releases. The inspectors confirmed that, prior to any batch release, effluent samples were taken and analyzed, off-site doses were calculated, and the associated radiation monitor alarm set points were appropriate to mitigate an off normal discharge. The inspectors confirmed that hard-to-detect radioisotopes, identified in 10 CFR 61 analyses, were accounted for in preparing the discharge permits.

The inspectors reviewed monthly, quarterly, and annual dose projections for liquid and gaseous effluents performed during the past 12 months to verify that the effluent was processed and released in accordance with ODCM requirements. The inspectors also confirmed that no RETS/ODCM performance indicator criteria was exceeded for this time period.

The inspectors reviewed the calibration records and daily quality control records for the counting room gamma spectroscopy and scintillation counting instrumentation to determine if the required lower limits of detection (LLD) were achievable and that effluent samples were adequately quantified and evaluated. The inspectors reviewed the results of NextEra's inter-laboratory cross check program to verify the quality and accuracy of effluent sample analysis performed by NextEra.

The inspectors reviewed relevant condition reports, nuclear assurance daily quality summary reports, quarterly radiation monitoring system health reports, and a nuclear quality assurance audit to evaluate NextEra's threshold for identifying, evaluating, and

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resolving problems in implementing the RETS/ODCM. This review was conducted against the criteria contained in 10 CFR Parts 20 and 50, the ODCM, and NextEra's procedures.

The inspectors verified that the radiological liquid and gaseous effluent dose calculation software, used for the generation of discharge permits, was included in the corporate validation and verification (V&V) program, to ensure that the software currently in use provided accurate dose projections.

b. <u>Findings</u>

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 6 samples)

a. Inspection Scope

The inspectors reviewed NextEra information from the third quarter of 2008 to the third quarter of 2009 for the Seabrook performance indicators (PIs) listed below: To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, was used to verify the basis in reporting each data element.

Cornerstone: Mitigating System

The inspectors reviewed NextEra submittals and data for the Seabrook mitigating systems performance index (MSPI) PIs listed below.

- High Pressure Injection MSPI
- Heat Removal Systems MSPI
- Residual Heat Removal MSPI

The inspectors reviewed the consolidated MSPI data entry derivation reports for the unavailability and unreliability indexes (UAI and URI) for the monitored systems; the monitored component demands and demand failure data for the monitored systems; and the train and system unavailability data for the monitored systems. The inspectors verified the accuracy of the data by comparing it to corrective action program records, control room operators' logs, maintenance rule performance and scope reports, system performance/health reports, the equipment/operability issues database, the site operating history database, key performance indicator summary records, operating data reports and the MSPI basis document.

Cornerstone: Barrier Integrity

Reactor Coolant System Leakage

The inspectors reviewed RCS leak rate data as part of their daily monitoring of plant status. The inspectors reviewed the determination of an RCS leak rate on November 15-30, 2009, per procedure OX1401.02. The inspectors reviewed LERs, operating logs, procedures, and interviewed applicable personnel to verify the accuracy and completeness of the reported data.

Cornerstone: Occupational Radiation Safety

Occupational Exposure Control Effectiveness

The inspectors reviewed implementation of NextEra's Occupational Exposure Control Effectiveness PI Program. Specifically, the inspectors reviewed condition reports, and associated documents, for occurrences involving locked high radiation areas, very high radiation areas, and unplanned exposures against the criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, to verify that all occurrences that met the NEI criteria were identified and reported as performance indicators. This inspection activity represents the completion of one sample relative to this inspection area; completing the annual inspection requirement.

Cornerstone: Public Radiation Safety

RETS/ODCM Radiological Effluent Occurrences

The inspectors reviewed relevant effluent release condition reports for the period October 1, 2008 through November 30, 2009, for issues related to the public radiation safety PI, which measures radiological effluent release occurrences that exceed 1.5 mrem/qtr whole body or 5.0 mrem/qtr organ dose for liquid effluents; 5mrads/qtr gamma air dose, 10 mrad/qtr beta air dose, and 7.5 mrads/qtr for organ dose for gaseous effluents. This inspection activity represents the completion of one sample relative to this inspection area; completing the annual inspection requirement.

The inspectors reviewed the following documents to ensure NextEra met all requirements of the performance indicator from the fourth quarter 2008 through the third quarter 2009:

- Monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases; and
- Quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases; and dose assessment procedures.
- b. Findings

No findings of significance were identified.

- 4OA2 Identification and Resolution of Problems (71152 2 samples)
- .1 Review of Items Entered into the Corrective Action Program
- a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the Seabrook corrective action program (CAP). This review was accomplished by accessing NextEra's computerized database.

b. Findings

No findings of significance were identified.

.2 Semi-annual Review to Identify Trends

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors performed a review of the Seabrook CAP and associated documents to identify trends that may indicate existence of safety significant issues. The inspectors' review was focused on repetitive equipment and corrective maintenance issues, but also considered the results of daily CAP item screening. The inspectors compared their results with the results contained in the Seabrook CAP Quarterly Trend Reports.

b. Assessment and Observations

No findings of significance were identified. The inspectors did not identify any trends that NextEra had not already identified.

.3 Annual Sample -- Low Strength bolts in RHR System

a. Inspection Scope

The inspectors reviewed the identification, evaluation, and actions taken by NextEra at Seabrook Station to address the risk due to missing surveillance of the SG and Pressurizer manway Class 1 bolting material. This condition was first identified on June 9, 2009, during a nuclear oversight audit of the in-service inspection program. Previous NRC review of this topic was documented in IR 05000443/2009003.

b. Findings and Observations

NextEra obtained a relief from NRC from the requirements of ASME Code subparagraph IWA-5141(a). NRC granted Alternative Request 2AR-04, and approved use of ASME Code Case N-616 in lieu of the original requirement. However, the Code Case imposes some restrictions, and one of these restrictions is that if the bolting is corrosion resistant, and the bolting materials contain a minimum of 10% chromium, then bolt inspections can be performed without removing the insulation. Although, the bolting material for the bolts in question were SA-193 Gr. B7 (studs) and SA-194 Gr. 7 (nuts), it did not contain 10% chromium as required by the Code Case. Thus, bolt inspections should have been conducted with the insulation removed. Because this was not done NextEra did not satisfy the VT2 surveillance requirement imposed by the TS 4.0.5(a). This deficiency was documented in CR00198881.

The inspectors determined that NextEra adequately implemented the corrective action process following the discovery of the issue. NextEra completed an appropriate operability evaluation and initiated corrective action to satisfy the code requirement. A detailed analysis and risk evaluation was performed to determine corrective actions. The evaluation concluded that the missed surveillance did not impact plant operations. However, WR 94001194 was issued to perform the VT2 on these bolts. The inspections, completed during OR13, did not identify any unacceptable conditions. The inspectors determined that corrective actions were timely and appropriate to prevent recurrence of the issue.

4OA3 Event Follow Up (71153 – 2 Samples)

.1 Reactor Protection System Actuation on Steam Generator Low Water Level

a. Inspection Scope

On October 1, 2009, the operators cooled down the plant in preparation for OR13. At 10:41 p.m. with the plant at 260 degrees in MODE 4, a reactor protection system (RPS) actuation occurred due to low water levels in the A and C SGs. RPS actuated when the operators failed to adequately control SG levels during the plant cooldown. The RPS actuation did not cause a plant transient because the reactor trip breakers were already opened and the emergency feedwater system was removed from service.

NextEra's cause analysis determined that in preparation to secure a reactor coolant pump (RCP), the operators raised SG levels in anticipation of level shrink within the SG. Level was raised to 40% (narrow range) using automatic feed water controls and allowed to stabilize. The operators then added more feedwater using manual feedwater control to further raise SG level. The additional relatively cool water caused an unexpected level shrink and the RPS actuation. The operators responded to restore SG levels and entered the action statement for TS 3.4.1.3.b while SG levels were below 14%. The operators recovered SG levels at approximately 11:07 p.m.

The inspectors reviewed operator actions to recover the affected SG level, reviewed the plant system response and the operator use of plant normal and abnormal operating procedures during the event, and examined the corrective actions to address SG level control. The inspectors reviewed NextEra's root cause evaluation included as part of AR 206507. The event evaluation considered: the event cause, extent of condition, risk and consequence assessment, evaluation of plant response, and the operator performance. The causes for the event included the operator's failure to properly control steam generator level (direct cause), and the operator's failure to adequately implement operating procedure OS1000.15 when cooling down the plant (root cause). The inspectors reviewed the bases for NextEra's determination that safety systems functioned as designed and that the plant responded as designed. The inspectors reviewed NextEra's actions to enhance operations procedures, training, and performance.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 05000443/2009001, Reactor Protection System Actuation on Steam Generator Low Water Level

This LER was submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A) to report the valid actuation of RPS on October 1, 2009 (eight-hour event notification EN #45403). NRC review of this event is described in Section 4OA3.1 above. The inspectors reviewed the accuracy of the LER and verified compliance with the reportability requirements in 10 CFR 50.73 and NUREG 1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," Revision 2. No findings of significance were identified and no violations of NRC requirements occurred. This LER is closed.

40A5 Other Activities

.1 Inspection Results for TI 2515/172, RCS Dissimilar Metal Butt Welds (DMBWs)

a. Inspection Scope

Temporary Instruction (TI) 2515/172 requires confirmation that owners of pressurizedwater reactors (PWRs) have implemented the industry guidelines of the Materials Reliability Program (MRP)-139 regarding nondestructive examination and evaluation of certain dissimilar metal welds in reactor coolant systems containing Alloy 600/82/182. The TI requires documentation of status of compliance with the MRP in this inspection report. The status of compliance and, responses to specific questions presented in the TI are included in Attachment B to this feeder report.

In summary, Seabrook Station completed the MRP required ultrasonic testing examination of all applicable remaining dissimilar metal butt welds in accordance with the ASME Code Section XI, Appendix VIII, Performance Demonstrations for Ultrasonic Examination Systems. Performance demonstration initiative (PDI) qualified automated UT procedures were used to perform the examination from the inside diameter of the dissimilar metal welds. The MRP-139 applicable DMBWs that were completed this outage consisted of four reactor coolant system (RCS) hot leg (HL) outlet nozzles and four cold leg (CL) inlet nozzles on the reactor vessel (RV).

In response to the discovery of an indication in the RCS D HL outlet nozzle at vessel 158 degree location, NextEra provided an ASME Section XI IWB-3600 flaw analysis. The analysis was documented in Seabrook Engineering Evaluation EE-09-016 and, in conjunction with the application of the stress improvement process (SI), supported operation for at least the next 18 months at which time the post SI specified volumetric examination will be performed.

In addition to the ASME analysis, Seabrook elected to perform the SI process on the RCS D HL outlet nozzle to mitigate potential growth of the flaw and defer the post SI process UT examination until OR14 in the Spring of 2011. The performance of the volumetric UT examination specified by the MRP following the application of the SI process was considered a hardship. NextEra was permitted deviation from MRP requirements by Revision 3 to Materials Guideline Implementation Protocol, NEI 03-08 Addendum E. In support of this postponement, NextEra prepared engineering evaluation EE-09-017 that provided the basis for deviation from the MRP requirement to perform the examination prior to return to service. In lieu of the requirement for the post mitigation pre-service examination for both axial and circumferential indications from the

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inside diameter (ID) of the nozzle, the examination will be performed during OR14 (Spring 2011). The deviation applies to the Seabrook RCS D HL outlet nozzle to safe end weld at vessel 158 degree location. NextEra's commitment to perform the complete UT pre-service examination of the subject outlet nozzle to safe end DMBW in OR14 will result in full compliance with MRP-139.

- .2 Independent Spent Fuel Storage Installation (ISFSI) Monitoring Controls (60855.1)
- a. <u>Scope</u>

The inspectors reviewed routine operations and monitoring of the ISFSI. The inspectors walked down the ISFSI with a senior radiation protection technician. The inspectors performed independent dose rate measurements of the storage modules, confirmed the locations of dosimetry on the facility perimeter, and confirmed module temperatures were within the required limits. The inspectors also reviewed past temperature records for the ISFSI modules and environmental (ISFSI) dosimetry data. Radiological control activities for the ISFSI were evaluated against 10 CFR 20, ISFSI TS, and NextEra's procedures.

b. <u>Findings</u>

No findings of significance were identified.

- .3 Quarterly Resident Inspector Observations of Security Personnel and Activities
- a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with site security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. Paul Freeman, Site Vice President, and Seabrook Station staff at the conclusion of the inspection on January 12, 2010. NextEra acknowledged the conclusions and observations presented. The inspectors also confirmed with NextEra that no proprietary information was reviewed by inspectors during the course of the inspection and that the content of this report includes no proprietary information.

40A7 Licensee-Identified Violations

The following violation of NRC requirements was identified by NextEra, was determined to have very low significance (Green) and to meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a non-cited violation.

10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis, are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, NextEra did not assure that the design basis for safety-related buried cables was correctly translated into specifications, drawings, procedures, and instructions. Specifically, NextEra did not maintain safety-related underground cables in an environment for which they were designed. The cables were found submerged. This was identified in the corrective action program as 211808 to initiate review of the current manhole and cable monitoring programs, and to initiate long-term corrective actions. This finding is of very low safety significance (Green) because it did not represent an actual loss of safety function or contribute to external event core damage sequences.

ATTACHMENTS: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

R. Arn, Engineering

J. Ball, Maintenance Rule Coordinator

R. Belanger, Design Engineer

M. Bianco, Radiological Waste Services Supervisor

B. Brown, Plant Engineer

V. Brown, Senior Licensing Analyst

K. Browne, Assistant Operations Manager

B. Buerger, Nuclear Projects

J. Buyak, Senior Radiation Protection Technician, (Respiratory Protection)

R. Campione, Nuclear Oversight Supervisor

R. Campo, Plant Engineer

W. Cash, Chemistry Manager

T. Cassidy, Training Support Supervisor

D. Chang, Tagging Support

R. Couture, Reactor Engineer

W. Cox, Radiological Waste Services, Senior Technical Analyst

J. Crowley, I&C Superintendent

R. Duarte, Operations Training Supervisor

J. Esteves, Design Engineer Systems

D. Feeney, Mechanical Maintenance

D. Flahardy, RP Technical Supervisor

P. Freeman, Site Vice President

R. Guthrie, Systems Engineer, Radiation Monitoring System

D. Hampton, Radiation Protection Specialist

F. Hannify, Radiological Waste Services, Senior Technical Analyst

D. Hickey, Radiation Protection Supervisor

M. Hansen, Maintenance Manager

R. Jamison, Design Engineer Electrical

G. Kann, Dry Cask Storage Project Engineer

S. Kessinger, Work Control Supervisor

R. Logue, Senior Radiation Protection Technician, (Instrumentation)

G. Kim, Risk Analyst

M. Leone, Operations Training Instructor

E. Metcalf, Plant General Manager

M. Lipman, Plant Technician

T. Manning, Engineering

D. Master, Plant Engineer

B. McAllister, SW System Engineer

N. McCafferty, Plant Engineering Manager

W. Meyer, Radiation Protection Manager

D. Merrill, Maintenance Technical Superintendent

E. Metcalf, Plant General Manager

E. Momm, Acting Training Manager

M. O'Keefe, Licensing Manager

K. Mahoney, Reactor Engineer

R. Noble, Engineering Manager

M. Ossing, Engineering Support Manager

V. Pascucci, Quality Assurance Manager

D. Perkins, Rad Services Supervisor

E. Piggot, Unit Supervisor

R. Plante, Maintenance Supervisor

B. Plummer, Nuclear Projects Manager

N. Pond, Tagging Coordinator

K. Purington, Reactor Operator

K. Randall, Reactor Engineer

T. Rossengal, RHR System Engineer

M. Russell, Operations Clerk

M. Scannell, Senior Health Physicist

W. Schmidt, Electrical Maintenance

G. Sessler, EDG System Engineer

J, Soucie, Nuclear Plant Operator

G. St. Pierre, Vice President - Support

M. Taylor, Unit Supervisor

R. Thurlow, Corporate Radiation Protection Manager

J. Tucker, Security Manager

J. Varga, Reactor Operator

J. Walsh, CVCS System Engineer

N. Walts, Unit Supervisor

S. Wellhofer, Site Nurse

R. White, Security Supervisor

K. Wright, Training Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed:

05000443/2009001

LER Reactor Protection System Actuation on Steam Generator Low Water Level (Section 40A3.2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

ON1490.06, Winter Readiness Surveillance, Revision 5 OP-AA-102-1002, Seasonal Readiness, Revision 0 OS1200.03, Severe Weather Conditions, Revision 14 OS1200.03, Attachment D, Severe Weather Actions, Revision 14 OS1090.09, Station Cold Weather Operations, Revision 01 ER1.1, Classification of Emergencies, Revision 46 WO1174343, Winter Readiness Surveillance Condition Reports 205949, 212664 UFSAR Section 2.4, 3.4, and 9.3.3, Revision 12 Station Operating Logs

Section 1R04: Equipment Alignment

Plant Engineering Guideline, PEG-252, Chemical and Volume Control System PEG-30, Performance Monitoring Guidelines Technical Requirements Manual, TR29, Emergency Boration System Health Report - Chemical and Volume Control System Plant Engineering Action Plan Register **Operations Logs - various** PID: B20722 - 29; B20841, 43, and 44 OS1002.01, Filling and venting the charging, letdown, seal injection and excess letdown portions of the Chemical Volume and Control System OX1408.04, Weekly Borated Water Source Evaluation OS1090.05. Component Configuration Control OS1013.05r10, Residual Heat Removal Train A Shutdown OS1013.06r9, Residual Heat Removal Train B Shutdown UFSAR Section 9.3, Chemical and Volume Control System UFSAR Section 5.1, Reactor Coolant System and Connected Systems CR192766, 08-06260, 08-07918, 08-11484 AR 201652, 201648, 201645, 200325 WO 0832123, 0816256, 0825566, 0831071 OS1016.04, Service Water Train B Operation, Revision 9 OS1016.05, Service Water Cooling Tower operation, Revision 10 SW-B20794, SW P&ID, Rev. 33 SW-B20795, SW P&ID, Rev. 37 SW-D20795, SW P&ID, Rev. 38 WO 01198104

Section 1R05: Fire Protection

UFSAR Section 9.5.1 Fire Protection Systems Fire Protection Pre-fire Strategies

Section 1R06: Flood Protection Measures

UFSAR Section 3.4, Water Level (Flood) Design, Revision 12 UFSAR Section 9.3.3, Equipment and Floor Drainage System, Revision 12 Seabrook Station Probabilistic Safety Study, Section 12, 2006 Update ER-AA-106, Cable Condition Monitoring Program, Revision 0 Engineering Evaluations 90-10 and 94-41 for submerged Electrical Cables and Supports Drawings 310249, 310248, 30258 and 310257 for Site Manhole and Vault Layouts

Section 1R07: Heat Sink Performance

ES 1850.017, Service Water Heat Exchanger Program, Revision 0 MS0515.19, PCCW Heat Exchanger Head Removal/Installation, Revision 4 PEG-208, Service Water System Performance Monitoring, Revision 3 CC-E-17A Temperature and Thermal Performance Monitoring Data CC-E-17A Performance Monitoring Trend Data CP4.2, Chlorine Management Program, Revision 13 CC-E-17A temperatures 10/1-2/09 WO 01167976, 1-CC-HX-17A Tube Sheet Inspection

Section 1R08:	
ES1807 002 B7	Liquid Penetrant Examination – Solvent Removable
ES1807.003 R7	Magnetic Particle Examination
ES1807.033 R1	Radiographic Examination
ES1809.001	Pressure Leak Testing
ES03-01-22 R2	PDI Generic Procedure for Ultrasonic Examination Austenitic Pipe Welds
MA 10.1	Station Leakage Programs
MA 10.3 R4	Boric Acid Corrosion Control Program
EX1801.002 R9	Leakage Reduction Program Surveillance
EX1801.006 R/	Containment Leakage Reduction Program Surveillance
	Sell-Assessments
WCP-4	Welding Control Procedure (weld and base metal renair)
GOP 9.7	Liquid penetrant examination and acceptance standards for welds
GPQ 9.6 R9	General Quality Procedure for Visual Examination
GWS-1 R4	General Welding Standard - ASME Applications
PDI-UT-1 RD	PDI generic UT Procedure
PDI-UT-2	PDI Generic Procedure for UT of Austenitic Pipe Welds
PDI-UT-3 RC	Generic Procedure for Ultrasonic Through Wall Sizing in Pipe Welds
EPRI-DMW-PA-1 R0	Manual Phased Array Ultrasonic Examination of Dissimilar Metal Welds
Work Request:	Bernethelsen (her Englitzen efter Ormel Anne 100 fl. Ormeleinen et
WR 94002573	Clean Baria Acid (B2) on Pine Can
WR 94002004 WR 1160766	LIT data package for CBS 1210-11 06
WIX 1100700	
Condition Reports:	
CR 00206903	Tape residue and smeared boric acid found on BMI tubes
CR 00209583	Less than 100% exam coverage achieved UT of Pressurizer surge nozzle
CR 00206338	"B" Train Mixing Tee has reject able ASME indication
CR 00206441	Remove weld crown on "A" RHR mixing tee downstream weld
CR 00200000	A train RHR mixing tee UT exam requires further evaluation
CR 00207359	Reject able ASME indication in weld CBS 1210-11.06
CR 00209442	IWE exam identifies area of containment dome for investigation
CR 00208474, 767	IWE examination of containment liner coating require further investigation
CR 00208474	Four areas above +25 ft containment coating require assessment
CR 00207341	Containment liner coating anomalies
Examination Reports:	
09-01-125	UT Data Package, RHR Tee to Pipe Weld, Calibration Data Sheets
	Flaw Sizing Data Report, Weld Sketch Sheet, Examination Volume, field
00.02.010	Welds F U201, 0209 and F 0210 Elbow to Rina, liquid Reportant Examination
0628168	Radiographic Examination Report, Residual Heat Removal (3 reports)
09-03-001	Magnetic Particle Examination of Pressurizer skirt attachment weld
09-08-025. 029	VT-3 examination results of liner and structural attachments
09-01-010	Ultrasonic Data Package - Containment Spray, Pipe to Elbow
09-01-003	Containment building spray UT of pipe to pipe weld 1210-11-06

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Attachment

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09-06-027	Containment coating examination by VT-3. Includes reports 09-06-031, 09-06-035 and 09-06-039
Work Orders: WO 01170337 01 WO 01198476 01 WO 00625947 01	Containment Leakage Reduction Program Surveillance Implement MSIP on Delta SG Hot Leg Reactor Nozzle Removal and Replacement of service water flanged pipe reducer
Welding Procedures 8MN-GTAW R0 1MN-GTAW/SMAW 18MN-GTAW/SMAW PQR 063, 600 PQR 063 R3 PQR 600 R4 PQR 267 PQR 71, 231	(WP) and Procedure Qualification Records (PQ): Gas tungsten arc welding (GTAW) of stainless to stainless steel GTAW of carbon to stainless steel, notch toughness qualified GTAW/SMAW, manual welding of Carbon steel to stainless steel Procedure qualification record for Stainless steel butt welding Procedure qualification record, GTAW manual and Shielded Metal Arc Welding (SMAW) of stainless steel GTAW machine welding of stainless steel GTAW and SMAW welding of carbon to stainless steel Procedure qualification of carbon steel with notch toughness
Drawings 1-NHY-800272ISI 1-NHY-800364ISI 1-NHY-800272ISI 1-NHY-650006 1-CBS-B20233	Elbow to Pipe butt weld, safety injection, 4 inch, 3`6 stainless steel Weld Identification Containment Spray System Weld Identification Safety Injection System Pressurizer skirt integrally welded attachment PID Containment Spray System
Miscellaneous MRP 192 R1 08-0056 2008 3 rd Qtr 2008 4 th Qtr 2009 1 st Qtr CT 10821 HP 10741 HP 1085C NDE Section XI EE-09-013	Assessment of RHR Mixing Tee Thermal Fatigue Focused Self Assessment – Boric Acid Corrosion Control Program Program Health Report - Boric Acid Corrosion Control Program Program Health Report – Boric Acid Corrosion Control Program Program Health Report – Boric Acid Corrosion Control Program Low Contamination Boric Acid Cleaning Health Physics Boric Acid Cleaning Boric Acid Corrosion Control Program Personnel Certifications for VT examiners Code Case N-586-1 Engineering Evaluation for weld CBS-1210-11- F0118
NAH-09-61 R1 CBS-1210-11-06 DCR 87-0311	Flaw Evaluation for Containment Spray Piping at weld CBS-1210-1106 ASME XI Evaluation Sheet for Reportable Indications Design Change CBS/RHR Redundant Check Valves

<u>Section 1R11: Licensed Operator Requalification Program</u> Emergency Operating Procedure E-0, ES-0.1, ES-0.2, E-3, FR-S.1, ES-1.1, ER1.1A Procedure OS1216.01, OS1216.05, OS1201.01, OS1231.04, OS1231.05 OS1000.06 Simulator Demonstrative Exams #8 and #27 NT-5701-5, Crew Simulator Evaluation dated 11/18/09 NT-5701-1, Individual Simulator Evaluation dated 11/18/09 Licensed Operator Requalification Training (LORT) Training Program Description (9/11/09) Requalification Training Program Annual Examination Sample Plan 2008-2009 NT-5020, Job Performance Measures, Rev 14

NT-5702, Administration of Regualification Program Annual Examinations, Rev 18 NT-7012, Licensed Operator Regualification Exam Development and Administration Safeguards and Controls. Rev 5 OAI.22, Removal/Returning to Shift and License Activation Program, Rev 42 NAP-408, License Maintenance and Activation Program, Rev 9 End of Phase Roll-Up for LORT Phase 0803 End of Phase Roll-Up for LORT Phase 0904 Just in Time Training (JITT) dated 11/30/2009 CR-08-02580 CR-08-11678 NT-3700, Simulator Software Configuration Management, Rev 0 NT-3710, Simulator Scenario Testing, Rev 8 NT-3730, Simulator Performance Testing Schedule, Rev 14 NT-3732, Simulator Hardware Comparison, Rev 16 NT-3736, Simulator Core Performance Testing, Rev 9 NT-3737, Major Evolution Tests, Rev 4 NT-3740, Simulator Key Performance Indicator Tracking, Rev 7 NT-3743, Steady State Comparison Test, Rev 6 NT-3744, Simulator Annual Transient Tests, Rev 9 NT-3746, Administrative Control of Simulator Differences List, Rev 0 Minutes of Simulator Review Committee (4/8-9/09) Simulator Tests (2008 & 2009 unless otherwise noted): Manual Reactor Trip Simultaneous Trip of Both Main Feedwater Pumps Simultaneous Closure of all MSIVs Simultaneous Trip of All Reactor Coolant Pumps Trip of a Single Reactor Coolant Pump Turbine Trip at 18% Power (Below P-9) Maximum Size Unisolable Main Steam Line Break Slow Primary Depressurization PORV Opening Single Main Feedwater Pump Trip Loss of Offsite Power Large Break LOCA with Loss of Offsite Power Plant FW-FI-533 Failure (2009) C13 BOL Clean 0 MWD/MTU (2008) C13 BOL 500 MWD/MTU (2008) C13 MOL 10000 MWD/MTU (2008) C13 EOL 20000 MWD/MTU (2008) C14 Core Performance Test Comparison with C13 (2009) C14 BOL Clean 0 MWD/MTU (2009) Real Time Computing Performance (2009) Site Acceptance Test (DEHC control modification & DCS for Feedwater/Condensate) (2009) MPI Test - Startup to 22% Power (2008) Plant shutdown: 100% to 170°F on Shutdown Cooling (2008) Scenario Based Testing

Section 1R12: Maintenance Rule Implementation

Plant Engineering Guidelines, Maintenance Rule Program Monitoring Activities Plant Engineering Action Plan Register

NT-5701, Regualification Program Simulator Examinations, Rev 29

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Maintenance Rule Failures Evaluated in the Condition Report System System Health Reports – Main Steam, SEPS, EDE 4.16/13.8 KV Engineering Evaluation EE 05-020, 09-002 (09CAR043) IS0652.995, Main Steam Isolation Valve Maintenance OS1430.02, Main Steam Isolation Valve Quarterly Test, Revision 9 Work Orders for 2008 - 2009 Condition Reports for 2008 - 2009 WO 0414124, 1193440, 0334306, 1187911 CR 202630, 202683, 202606, 08-02487, 08-01722

Section 1R13: Maintence Risk and Emergent Work

PID-1-SW-F20795, Service Water System Work Orders 01195817, 00628148, 00628145, 00628148, 00628128, 01198488, 01198476, 01198120, 01198476, 01198476 Condition Reports 206338, 207921, 208506 Drawing 1-RH-D20663 Clearance Order 1-EDE-SWG-5-01 EC145179, RV Outlet Nozzle Safe End Weld ID Flaw Mitigation Via MSIP 10CFR5059 Screen 09-332 for EC145179 Procedure MSR-SSP-2567, RV Nozzle to Safe End Weld MSIP Field Service Procedure NuVision Engineering Report 4646-4-001, Analytical Verification of MSIP for RV Hot Leg Nozzle to Safe End Weld Foreign Print 100543

Section 1R15: Operability Evaluations

Operator Logs Prompt Operability Determinations for CR206338 and CR209357 ES1807.043, RHR Mixing Tee Thermal Fatigue Cracking Ultrasonic Examination (MRP0192) Westinghouse Letter LTR-PAFM-09-105 dated 10/1/09 Westinghouse Letter NAH-09-061 dated 10/13/09 (FP98696) Condition Report 207723, 207767, 207352, 207357 Engineering Evaluation EE-09-013, ASME Code Case N-586-1Evaluation, 10/13/09 Condition Reports 209355 Engineering Evaluation EE-09-016 dated 10/22/09 Westinghouse Letter LTR-PAFM-09-119 dated 10/21/09

Section 1R18: Modifications

Condition Report 209078, 209067, EC145189, SW Piping Repair to 1-SW-1814-1-156-24" Drawing 1-SW-1814-01 Work Order 01198488, Calculation C-S-1-45560, SW Spools in Tank Farm / PAB Service Water Piping, Revision 3 C-S-1-45560 Attachment B, ADLPIPE Stress Analysis and Service Limits Updated Final Safety Analysis Section 8.2 09DCR002, Seabrook Substation Reliability Upgrade Project EC12735 Post Mod Test Plan UFSAR Change Request 09-013 Site Operation Review Committee Meeting 09-023 dated 7/22/09 10CFR50.59 Safety Evaluation for EC12735 (09DCR002)

Section 1R19: Post Maintenance Testing

Engineering Change EC144952, Install Operator on Lube Oil Temperature Control Valve EC144952 post modification testing

EN08-01-03 DEHC Site Acceptance Testing

07DCR005 Turbine Control system Replacement (DEHC)

ES1850.002, Vibration Monitoring, Revision 2

OX1456.01, Charging Pump A & B Quarterly Flow and Valve Stroke Test and 18 Month Remote Position Indication Verification, Revision 10

OX1456.81, Operability Testing of IST Valves, Revision 7

OS1047.01, Vital Inverter Operation, Revision 7

OS1047.02, Transfer Power Supplies to 120 VAC Vital Instrument Bus, Revision 8

LS0556.09, Replacement of Ferro-Resonant Transformers and Capacitors in 7.5 KVA Westinghouse Inverters, Revision 3

LX0557.03, Thermal Overload Protection Relay Replacement for Motor Operated Valves, Revision 2

LX0557.25, Reactor Trip Switchgear, Inspection, Testing and PM, Revision 2 MA3.5, Post Maintenance Testing, Revision 10

Plant Engineering Action Plan Register (EDE Inverter)

Technical Specification, Section 4.8.4.3, Motor Operated Thermal Overload Protection LS0569.27, Inspection/PM of Rotork Valve Actuators, Revision 2

Condition Report 00211447, 00209116, 209166, 208719, 208149, 208274, 208299, 208313, 208088, 193637

Work Orders 0062642802, 01189548, 00628964, 01169500, 1197129, 1170562, 1168950, 1168953, 1168957

Section 1R20: Refueling and Outage Activities

Engineering Evaluation EE-09-007, OR13 Shutdown Risk Evaluation, Revision 0 Control Room Narrative Logs

Main Control board and MPCS Plant Parameter Displays and Trends

Engineering Evaluation EE09-007, OR13 Shutdown Risk Evaluation, 8/31/09

IX1656.922, Intermediate Range N35 Operational Test (WO 0843665)

IX1656.912, Source Range Monitor N31 Operating Test (WO 1198485)

MS0504.15, Upper Internais Installation (WO 01198134)

ODI.81, Plant Actions in Support of Mid-Loop, Decreased Inventory and Solid Reactor Coolant system Operations

ODI.82, Mode Change Notice

EDI 30560, Boric Acid Corrosion Evaluation RC Azimuth 158 Outlet Nozzle to Safe-End Connection

Maintenance Support Evaluation (MSE) 09MSE002, RCS Tech Spec Vent

OX1426.05, DG 1B Operability Surveillance (WO 01189937)

Clearance 1-EDE-I-1A-01, 1-CS-P-2-A-01, 1-BRS-TK-66-A-01, 1-FW-FW-4334-B-01, 1-RH-V-14-01, 1-RH-Train B-03

Outage and Operations Department Turnover Sheets

OS1000.01, Heatup from Cold Shutdown to Hot Standby, Revision 15 & 20

OS1000.02, Plant Startup from Hot Standby to Minimum Load, Revision 9 & 14

OS1000.03, Plant Shutdown from Minimum Load to Hot Standby, Revision 7 & 9

OS1000.04, Plant Cooldown from Hot Standby to Cold Shutdown, Revision 19

OS1000.05, Power Increase, Revision 8 & 12

OS1000.06, Power Decrease, Revision 9 & 11

OS1000.07, Approach to Critical, Revision 7 & 8

OS1000.09, Refueling Operation, Revision 11 and 12

OS1000.13, Operation with the Reactor Defueled, Revision 2

OS1000.15, Refueling Outage Cooldown, Revision 9

OS1001.02, Draining the Reactor Coolant System for Head Removal, Revision 10

OS1001.11, Reactor Coolant System Shutdown Level, Revision 4

OS1007.01, Automatic and Manual Rod Control, Revision 8 & 10

OS1013.03, Residual Heat Removal System Train A Startup and Operation, Revision 14

OS1013.04, Residual Heat Removal System Train B Startup and Operation, Revision 16

OS1014.02, Operation of Spent Fuel Cooling and Purification System, Revision 11

OS1015.05, Fuel Transfer System and Upender Operation, Revision 7

OS1015.07, Spent Fuel Bridge Assembly Operation, Revision 14

OS1015.18, Setting Containment Integrity for Mode IV Entry, Revision 5

OS1016.03, Service Water Train A Operation, Revision 9

OS1016.04, Service Water Train B Operation, Revision 9

OS1016.05, Service Water Cooling Tower Operation, Revision 11

OS1056.03, Containment Penetrations, Revision 4

ON1031.02, Starting and Phasing the Turbine Generator, Revision 16, 18 & 21

ON1031.03, Turbine Generator Shutdown, Revision 6

ON1031.13, Post Maintenance Turbine Startup, Revision 3

OX1401.02, RCS Steady State Leak Rate Calculation, Form B, Revision 7

OX1406.12, 18 Month Containment and Containment Spray Recirculation Sump Surveillance, Revision 7

OX1415.03, Refueling Containment Integrity Weekly Verification, Revision 5

RS0721, Refueling Administrative Control, Revision 8

RS0726, Irradiated Fuel Inspections, Revision 2

RS1735 Form A, Estimated Critical Position Data and Analysis, Revision 4

Reactor Engineering Operating Recommendation (REOR) 09-REOR-00x, Guidance for Beginning of Cycle 14 Power Ascension

REOR 09-REOR-016, Shutdwon to FO13, 12/2/09

Open Condition Reports and Actions with Mode Restrictions

Mode Change Report Mode 6 to Mode 5

Mode Change Report Mode 5 to Mode 4

Mode Change Report for Modes 3, 2, 1

Cycle 14 Core Operating Limits Report, 10/17/09

WO 01167928, Containment and Containment Spray Recirculation Sump Surveillance per OX1406.12 on 11/5/09

WO 01169856, Polar Gantry Crane Refueling Outage Inspection per MN0534.01, 10/3/09

License Amendment No. 123, Changes to Steam Generator Inspectors Scope and Repair Criteria, 10/13/09

Condition Reports 203302, 209248, 209098, 211042, 205133, 206338, 206285, 206286, 206436, 206507, 206544, 206989, 207129, 207352, 207353, 207355, 208357, 207474, 207767, 207921, 208003, 208009, 208108, 208449, 208678, 208974, 209062, 209116, 209357, 209401, 209613, 207250, 207820, 206371, 206428, 206428, 206475, 206162, 206766, , 206436, 206478, 206506, 208861, 209067, 209068, 209708, 210042, 210487, 210989, 211042, 211215, 211218, 211357, 211860, 212219, 212867, 213393

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Nuclear Oversight Audit Report SBK- 09-055, 12/21/09

Calculation SBK-1FJF-09-179, Seabrook Cycle 14 Nuclear Design Report, October 2009 Seabrook Updated FSAR, Section 9.1.3, Spent Fuel Pool Cooling and Cleanup System Seabrook Updated FSAR, Section 9.2 Component Cooling Water

Technical Specification 3/4.9.4 Containment Penetrations (Refueling Operations)

RD0717, Automated EXCEL Core Offload Tracking, Revision 0

MS0504.11, Reactor Vessel Upper Internals Assembly Removal and Storage, Revision 10 ODI.81, Plant Actions in Support of Mid-Loop, Decreased Inventory and Solid Reactor Coolant System Operations, Revision 6

EX1803.003, Reactor Containment Type B and C Leakage Rate Tests

IX1641.903, Pre-operational Checks Of Refueling Machine, Revision 3

Seabrook Station Response to NRC Generic Request for Additional Information Relating to Nureg-0612 "Control of Heavy Loads", Revision 2

RS0720, SNM Inventory and Control, Revision 8

Forced Outage

Clearance 1-SI-P-6-A/B-MPE-01, 1-CS-P-2-A/B-MPE-01

WO1199731 (OS1456.02)

OF-13 Risk Evaluation

MODE Change Report MODE 5 to MODE 4

SSTRr117, Seabrook Station Technical Requirements, Core Operating Limits Report, Cycle 14 Operations logs - various

MODE Change Report MODE 4 to 3, MODE 3 to 2, and MODE 2 to 1

CR211042 -Turbine Torsional Response of Turbine Generator during Power Ascension

NHY Turbine Generator Torsional Vibration Study, January 1991

GE Letter dated November 24, 2009 – Summary of GE Recommendations Regarding LP Rotor Replacement

GE Letter dated February 23, 2009 - Seabrook 170X560 Torsional Summary

GE Presentation – Seabrook Rotor Torsional Vibration Tuning

GE Technical Information Letter TIL 1012-2 dated 8/7/07

EC12733 – LP Rotor Upgrade Phase 1 (08MMOD528)

MPR Letter, Final Results of Torsional Measurements after HP Rotor Replacement, 5/27/05 Adverse Condition Monitoring and Contingency Plan for Turbine Torsional Frequency, 11/16/09

Section 1R22: Surveillance Testing

Work Orders 01170500, 01170499, 01199276,1168495, 1168614, 1196140, 01170992 Seabrook Cycle 14 Subcritical Physics Testing and Subcritical Rod Worth Measurement Results Core Operating Limits Report for Cycle 14, 10/17/09

Simulate-3 Case #a14002, 11/13/09

09-REOR-015, BOC14 Power Ascension, 11/13/09

OX1456.88, Auto SI, Phase A, Phase B, CBS, CVI & CBA Actuation and Manual SI, Phase A, Phase B, CBS & CVI Actuation 18 Month Surveillance Train A, Revision 3

OX1426.20, Diesel Generator 1A 18 Month Operability and Engineered Safeguards Pump and Valve Response Time Testing Surveillance, Revision 11

OX1426.32, Diesel Generator 1B 18 Month Operability Surveillance, Revision 0

OX1456.93, Train B SI, Phase A, CVI & MSI Actuation 18 Month Surveillance, Revision 1

OX1405.13, Safety Injection Comprehensive Pump Test, Revision 1

OX1456.86, Operability Testing of IST Pumps, Revision 6

OX1804.047, Reactor Coolant System Pressure Isolation Valve Leakage Rate Tests, Revision 5

OX1401.02, RCS Steady State Leak Rate Calculation, Revision 7

Section 1EP6: Drill Evaluation

Simulator Demonstrative Exams #8 and #27

NT-5701-5, Crew Simulator Evaluation dated 11/18/09

NT-5701-1, Individual Simulator Evaluation dated 11/18/09

Demonstration Procedure - PANS Audible Alert Tone Demonstration November 18, 2009

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

Procedures:

CS0908.01, Off-Site Dose Assessment CS0917.02, Gaseous Effluent Releases CX0917.01, Liquid Effluent Releases CS0917.03, Unmonitored Plant Releases CS0905.10, Chemistry Response to RDMS or Waste Gas Oxygen Monitor Failure or Alarm CS0905.08, Response to a Primary to Secondary Leak CS0920.07, Tritium Analysis by Liquid Scintillation CS0910.10, Gaseous Effluent Sampling CD0904.11, Split and Cross Check Analysis IX1688.110, F-1458-1 Waste Test Tank Discharge Flow Calibration IX1660.816, RM-R-6506 WLTT's Discharge Radiation Monitor Calibration IX1660.826, Turbine Building Sump Radiation Monitor Calibration

IX1660.730, RM-R-6528 Plant Vent Wide Range Gas Radiation Monitor (WRGM) Calibration

CS0910.10, Gaseous Effluent Sampling

CS0910.08, Miscellaneous Primary Side Sampling

Filtration System Test Reports:

Containment Enclosure Recirculation Filtration Tests

Containment Air Purge Filtration Test

Primary Auxiliary Building Exhaust Filtration Test

Fuel Storage Building Cleanup Filtration Test

In-Place Monitor Calibration Records:

Condenser Air Evacuation Monitor (RM-6505)

Primary Component Cooling Water Monitor (RM-6515)

Blow-down Flash-tank Monitor (RM-6519)

Waste Liquid Test Tank Discharge Rad Monitor (RM-6509)

Turbine Building Sump Monitor, (RM-6521)

Plant Vent Wide Range Gas Monitor (M-6528)

Nuclear Oversight Department Reports:

Daily Quality Summary Reports, Chemistry Related Activities, 2007-2009 SBK-09-031, Chemistry Control Program, Radiological Effluents Technical Requirements Program, and off site Dose Calculation Manual Audit

Liquid /Gas Discharge Permits

Nos. 08-552, 08-368, 08-612, 08-471, 08-059, 08-286, 08-369, 08-060, 09-118, 09-466, 09-470, 09-471, 09-473, 09-474, 09-478, 09-492, 09-502

Condition Reports:

Nos. 09-00183, 08-01332, 09-00896, 08-10935, 09-00558, 09-00640, 08-15372, 08-08992, 07-16180, 07-14242

Miscellaneous Reports:

2007 and 2008 Annual Radioactive Effluent Release Reports 10 CFR 50.75 (g), Decommissioning Records RETS/ODCM Radiological Effluent and Exposure Control Performance Indicator Occurrences reports for the period October 2008-October 2009

Off Site Dose Calculation Manual, Rev 33 Inter-Laboratory Radiochemistry Quality Control Reports Liquid waste discharge permit 09-602, steam generator blowdown waste holdup sump

Section 20S1: Access to Radiological Significant Areas

Procedures HD0958.03, Rev 24 Personnel Survey and Decontamination Techniques HN0958.13, Rev 28 Generation and Control of Radiation Work Permits HD0958.17, Rev 12 Performance of Routine Radiological Surveys HD0958.19, Rev 30 **Evaluation of Dosimetry Abnormalities** HN0958.25, Rev 28 High Radiation Area Controls HD0958.30, Rev 23 Inventory and Control of Locked or Very High Radiation Area Keys and Locksets HD0958.48, Rev 02 Health Physics Job Coverage Using Remote Monitoring Issuance and Control of Personnel Monitoring Devices HD0992.02, Rev 33 HN0958.30. Rev 23 Inventory and Control of Locked or Very High Radiation Area Keys and Locksets HN0958.39, Rev 33 Multi-Badge Control & Exposure Tracking RP 2.1, Rev 22 General Radiation Worker Instruction and Responsibilities RP 3.1. Rev 23 Radiological Qualification Requirements RP 4.1, Rev 20 Requirements for Issuing Personnel Dosimetry RP 5.1, Rev 17 Annual Occupational Exposure Control and Increased Radiation Exposure Approval RP 9.1, Rev 25 **RCA Access/Egress Requirements** Radiological Controls for Materials RP 13.1. Rev 24 RP 13.2, Rev 6 Storage of Highly Radioactive Material in the Reactor Cavity or Spent Fuel Pool RP 15.1, Rev 19 Job Pre-Planning and Review for Radiation Exposure Control RP 15.2, Rev 09 ALARA Recommendations RP 15.4. Rev 11 Use and Control of Temporary Shielding **Condition Identification and Screening Process** PI-AA-204, Rev 0

Quality Assurance Reports:

- Daily Quality Summary Reports for the period January 1, 2009 through October 6, 2009
- Radiation Protection/ OR13 ALARA Preparations Audit (SBK-09-05)

- Nuclear Oversight Department OR13 Outage Plan

Condition Reports:

206429, 208168, 208183, 208088, 199455, 204325, 192738, 192786, 193515, 198879, 206328, 206743, 206758, 207099, 208151, 208050, 192786, 192738, 193515, 198879, 204325, 206328, 206743, 207099, 207564, 207867, 207573, 208168

Miscellaneous:

- Selected Temporary Shielding Requests
- Reactor Coolant Chemistry Post Shutdown Data
- Reactor Coolant System Piping Dose Rates Post Shutdown
- Radiation Safety Committee Meeting Minutes/Handouts

ALARA Reviews:

- AR 09-01, OR13 RV Disassembly & Reassembly
- AR 09-02, OR13 Steam Generator Eddy Current Testing & Tube Plugging
- AR 09-03, OR13 Steam Generator Secondary Side Maintenance & Inspections
- AR 09-04, OR13 In-service Inspections Cavity
- AR 09-05, OR13 Cavity Decontamination
- AR 09-06, OR13 MOV Testing/Preventative Maintenance & Repair
- AR 09-07, OR13 Valve Maintenance
- AR 09-10, OR13 RCP Maintenance
- AR 09-11, OR13 Scaffold Installation/Removal

- AR 09-13, OR13 RHR Line 158 Pipe Replacement (Mixing Tee Weld Repairs)

Section 40A1: Performance Indicator Verification

Engineering Evaluation-09-003, MSPI Basis Document Update, Revision 0 MSPI Derivation Report, Heat Removal System, Unavailability Index MSPI Derivation Report, Heat Removal System, Unreliability Index MSPI Derivation Report, Residual Heat Removal System, Unavailability Index MSPI Derivation Report, Residual Heat Removal System, Unreliability Index MSPI Derivation Report, Residual Heat Removal System, Unreliability Index MSPI Derivation Report, High Pressure Injection, Unavailability Index MSPI Derivation Report, High Pressure Injection, Unavailability Index Seabrook Station License Event Reports Condition Reports 2008-2009 Operator Logs eSOMS Tagout Logs

Section 40A2: Identification and Resolution of Problems

Condition Report 00209248, 00209098, 207855, 208975, 212038, 213017, 213021 Adverse condition Monitoring Plan Seabrook Station Engineering Procedure EX1810.101, Rev. 09 Seabrook Station Trend Report Refueling Outage13 Engineering Evaluation "Risk Evaluation of a Missed Surveillance for Visual Inspection of SG & PZR Manway Bolts Action Tracking System: AR#00198881, dated 06/09/2009 Work Order WO 94001194, dated 10/03/2009

Section 40A3: Event Follow-up

Standing Order SOO 09-014 Root Cause Evaluation for AR 206507, Reactor Trip Signal during Outage Cooldown due to Low Steam Generator Level ODI 87 (operation department instruction), Operations Management Expectations eDNA charts – various Main Plant Computer System print outs – various Control Room Narrative Logs – various OS1000.15r16, Refueling Outage Cooldown Section 40A7: Licensee-Identified Violations

Condition Report 211808, 211357 Work Order 01198644 UFSAR Section 3.2 and 3.4 Drawings 101696, 9763-F-310248 Generic Letter 2007-01, February 7, 2007 Plant Engineering Action Plan Register Anaconda Industries Certificate of Compliance #23373 UE&C Specification No. 9763-006-113-1, 11/5/76 New Hampshire Yankee Letter NYN-90069, March 13, 1990 NRC Region I Inspection Report 50-443/90-07, June 6, 1990 Engineering Evaluation 90-10, March 09, 1990 Engineering Evaluation 94-41, February 14, 1995 Engineering Evaluation 07-018, April 17, 2007 WYLE Report 17122, March 7, 1990 (FP34913)

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
ALARA	As Low As Is Reasonable Achievable
AR	ALARA Reviews
ASME	American Society of Mechanical Engineers
CR	Condition Reports
DAW	Dry Active Waste
DCR	Design Change Request
DSC	Dry storage canister
DS	Disconnect Switch
EC	Engineering Change
ECT	Eddy Current Testing
ED	Electronic Dosimeter
EDG	Emergency Diesel Generator
ESFAS	Engineered Safety Feature Actuation System
FME	Foreign Material Exclusion
GE	General Electric
NEXTERA	Florida Power & Light Energy
HEPA	High Efficiency Particulate Absolute
HRA	High Radiation Areas
IMC	Inspection Manual Chapter
ISFSI	Independent Spent Fuel Storage Installation
ISI	In-service Inspection
LERs	Licensee Event Reports
LHRA	Locked High Radiation Areas
MPCS	Main Plant Computer System
MS	Main Steam
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation

ODCM	Off-Site Dose Calculation Manual
PAB	Primary Auxiliary Building
PARS	Publicly Available Records
PCP	Process Control Plan
PMT	Post-Maintenance Testing
PWR	Pressurized Water Reactor
RCA	Radiological Controlled Area
RCS	Reactor Coolant System
RETS	Radiological Environmental Technical Specifications
RHR	Residual Heat Removal
RMSB	Radioactive Materials Storage Building
RV	Reactor Vessel
RWP	Radiation Work Permit
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SG	Steam Generator
TI	Temporary Instruction
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
UHF	Ultra High Frequency
UT	Ultrasonic Testing
VHRA	Very High Radiation Areas
WO	Work Order

TI 172 DOCUMENTATION QUESTIONS FOR SEABROOK STATION

Introduction:

Temporary Instruction (TI), 2515/172 provides for confirmation that owners of pressurizedwater reactors (PWRs) have implemented the industry guidelines of the Materials Reliability Program (MRP)-139 regarding nondestructive examination and evaluation of certain dissimilar metal butt welds (DMBW) in reactor coolant systems (RCS) containing Alloy 600/82/182. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in this Attachment B.

There are eight coolant nozzles on the reactor vessel. Four are inlet nozzles with an inside diameter of 27.5 inches, and four are outlet nozzles with an inside diameter of 29 inches. The nozzles are fabricated from manganese-molybdenum forgings with weld deposited cladding and are welded to the pressure vessel.

In summary, Seabrook Station completed the MRP required ultrasonic testing examination of all applicable remaining dissimilar metal butt welds in accordance with the ASME Code Section XI, Appendix VIII, Performance Demonstrations for Ultrasonic Examination Systems. Performance Demonstration Initiative (PDI) qualified automated ultrasonic test procedures were used. The remaining MRP-139 applicable DMBWs that were completed this outage consisted of four RCS hot leg (HL) outlet nozzles and four RCS cold leg (CL) inlet nozzles on the reactor vessel (RV).

In response to the discovery of an indication in the RCS D HL outlet nozzle (vessel158 degree location), NextEra provided an ASME Section XI IWB-3600 flaw analysis. The analysis wais documented in Seabrook Engineering Evaluation EE-09-016 and, in conjunction with the application of the stress improvement process (SI), supported operation for at least the next 18 months at which time the MRP designated volumetric examination will be performed.

In addition to the analysis, Seabrook Station elected to perform the stress improvement (SI) process on the reactor coolant (D) HL outlet nozzle to mitigate potential growth of the flaw. The performance of the volumetric (UT) examination specified by the MRP following the application of the SI process was considered a hardship at this time and was not done. NextEra is permitted deviation from MRP requirements within Revision 3 to Materials Guideline Implementation Protocol, NEI 03-08 Addendum E.

In support of this postponement, NextEra prepared engineering evaluation EE-09-017 that provides the basis for deviation from the MRP requirement to perform the examination prior to return to service. In lieu of the requirement for the post mitigation pre-service examination for both axial and circumferential indications from the inside diameter (ID) of the nozzle, the examination will be performed during OR14 (Spring 2011). The deviation applies to the Seabrook RCS D HL outlet nozzle to safe end weld at 158 degrees, which was mitigated this outage by the SI process. NextEra's commitment to perform the complete UT preservice examination in OR14 will result in full compliance with MRP-139.

a. For MRP-139 baseline inspections:

Qa1. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

A. Yes. The baseline inspections required by MRP-139 were not completed within the prescribed time frame. The eight (8) reactor vessel RCS welds (4 hot legs and 4 cold legs) were examined using PDI qualified UT procedures during this outage OR13 (Fall 2009). However, UT inspection revealed a rejectable indication at the inside diameter of one HL outlet nozzle (158 degree vessel location). This location was subjected to SI but could not be UT inspected following application of the process. A deviation was requested due to hardship and the examination was postponed until OR 14 (Spring 2011). The deviation was submitted in accordance with Revision 3 to Materials Guideline Implementation Protocol, NEI 03-08 Addendum E with technical justification provided in Seabrook engineering evaluation EE-09-017.

Qa2. Is NextEra planning to take any deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned and what is the general basis for the deviation? If inspectors determine that a licensee is planning to deviate from any MRP-139 baseline inspection requirements, NRR should be informed by email as soon as possible.

A. Yes. A deviation from the MRP required volumetric examination following the application of the SI process on weld, D HL at vessel 158 degrees was submitted due to hardship considerations. No further deviations are planned.

b. For each examination inspected, was the activity:

Qb1. Performed in accordance with the examination guidelines in MRP-139 Section 5.1 for unmitigated welds or mechanical stress improved welds and consistent with NRC staff relief request authorization for weld overlaid welds?

A. Yes. The examination activity was performed in accordance with guidelines in MRP-139, Section 5.1. No relief request was required as no weld overlays were applied at Seabrook during this outage.

Qb2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by NextEra for this activity.)

A. Yes. The examinations were performed by personnel qualified to the requirements of ASME Section XI, Appendix VIII. Procedures and personnel were qualified in the PDI program for the automatic ultrasonic examination of dissimilar metal welds.

Qb3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Yes. Indications identified in the ultrasonic examination were evaluated for relevance, characterized and entered into NextEra's corrective action program for disposition.

c. For each weld overlay inspected, was the activity:

Qc1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief request authorizations? Has NextEra submitted a relief request and obtained NRR staff authorization to install the weld overlays?

A. NA. No weld overlays were applied during this outage. No weld overlays were inspected during this outage.

Qc2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by NextEra for this activity.)

A. NA. No weld overlays were applied during this outage. No weld overlays were inspected during this outage.

Qc3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. NA. No weld overlays were applied during this outage. No weld overlays were inspected during this outage.

d. For each mechanical stress improvement used by NextEra during the outage, was the activity performed in accordance with a documented gualification report for stress improvement processes and in accordance with demonstrated procedures? Specifically:

Qd1. Are the nozzle, weld, safe end, and pipe configurations, as applicable, consistent with the configuration addressed in the SI qualification report?

A. Yes.

Qd2. Does the SI qualification report address the location radial loading is applied, the applied load, and the effect that plastic deformation of the pipe configuration may have on the ability to conduct volumetric examinations?

A. Yes.

Qd3. Do NextEra's inspection procedure records document that a volumetric examination per the ASME Code, Section XI, Appendix VIII was performed prior to and after the application of the SI?

A. No. The inspection procedure records document the volumetric (UT) inspection was performed in accordance with the ASME, Section XI, Appendix VIII code prior to the application of the SI. The SI weld (D outlet HL reactor vessel nozzle at the 158 degree location) was not examined following the application of the process. A deviation was requested as a result of hardship considerations, to postpone the volumetric inspection of the weld until the next outage OR14 (Spring 2011). The deviation justification was provided in Seabrook engineering evaluation EE-09-017.

Qd4. Does the SI qualification report address limiting flaw sizes that may be found during pre-SI and post-SI inspections and that any flaws identified during the volumetric examination are to be within the limiting flaw sizes established by the SI qualification report.

A. Yes. The limiting flaw size is addressed by the SI qualification report. However, post SI inspection will not be performed until the next outage.

Qd5. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Yes. Pre-SI flaws identified during the volumetric examination were evaluated for relevance, characterized and entered into NextEra's corrective action program for disposition. Volumetric examination following the SI process will be performed during OR14 (Spring 2011). Any flaws identified will be evaluated, characterized and entered into NextEra's corrective action program.

e. For the inservice inspection program:

Qe1. Has NextEra prepared an MRP-139 inservice inspection (ISI) program? If not, briefly summarize NextEra's basis for not having a documented program and when NextEra plans to complete preparation of the program.

A. Yes. NextEra has an MRP-139 ISI program, which is implemented through the Reactor Coolant System Materials Degradation Management Program and, is separate from the ASME Section XI ISI program. In the interim, the MRP-139 inservice inspection program is implemented through the existing Alloy 600 Aging Management Program that contains the strategy for all alloy 600/82/182 pressure boundary dissimilar butt weld locations at Seabrook. This plan includes inspections, examination schedules, and mitigation and repair/replacement activities. Welds will be added to the Section XI ISI program when mitigation or repair/replacement activities have been completed.

Qe2. In the MRP-139 inservice inspection program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

A. Yes. All welds are categorized per MRP-139 requirements as applicable.

Qe3. In the MRP-139 inservice inspection program, are there inservice inspection frequencies, which may differ between the first and second 10-year intervals after the MRP-139 baseline inspection, consistent with the inservice inspection frequencies called for by MRP-139?

A. All MRP-139 applicable welds are scheduled either for mitigation and/or inspection prior to the end of the current 10-year ISI inspection interval which ends in August 2010. A deviation request has been submitted to postpone the required post SI UT examination on the reactor coolant HL outlet D nozzle at 158 degrees (vessel azimuth) until OR14 (Spring 2011).

Qe4. If any welds are categorized as H or I, briefly explain NextEra's basis for the categorization and NextEra's plans for addressing potential PWSCC.

A. No welds are categorized as H or I.

Qe5. If NextEra is planning to take deviations from the inservice inspection requirements of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

A. No deviations are currently planned for ISI of the welds to MRP-139 at Seabrook.