



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713**

April 16, 2018

Mr. Mano Nazar
President and Chief Nuclear Officer
Nuclear Division
NextEra Energy Seabrook, LLC
Mail Stop: EX/JB
700 Universe Blvd.
Juno Beach, FL 33408

**SUBJECT: SEABROOK STATION, UNIT NO. 1 – DESIGN BASES ASSURANCE
INSPECTION (PROGRAMS) REPORT 05000443/2018007**

Dear Mr. Nazar:

On April 6, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of the Environmental Qualification Program implementation at Seabrook Station, Unit No. 1 (Seabrook). The NRC inspectors discussed the results of this inspection with Mr. Chris Domingos, Site Director, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any findings or violations of more-than-minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and the NRC's Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Glenn T. Dentel, Chief
Engineering Branch 2
Division of Reactor Projects

Docket Number: 50-443
License Number: NPF-86

Enclosure:
Inspection Report 05000443/2018007

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SUBJECT: SEABROOK STATION, UNIT NO. 1 – DESIGN BASES ASSURANCE
INSPECTION (PROGRAMS) REPORT 05000443/2018007 DATED
APRIL 16, 2018

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 50-443

License Number: NPF-86

Report Number: 05000443/2018007

Enterprise Identifier: I-2018-007-0001

Licensee: NextEra Energy Seabrook, LLC (NextEra)

Facility: Seabrook Station, Unit No. 1 (Seabrook)

Location: Seabrook, NH

Inspection Dates: March 19, 2018 to April 6, 2018

Inspectors: J. Schoppy, Senior Reactor Inspector
D. Kern, Senior Reactor Inspector
C. Hobbs, Reactor Inspector

Approved By: G. Dentel, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring NextEra's performance at Seabrook Station by conducting an engineering programs design bases assurance inspection of environmental qualification program implementation in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

No findings or more-than-minor violations were identified.

INSPECTION SCOPE

This inspection was conducted using the appropriate portions of the inspection procedure (IP) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program – Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.21N – Design Bases Assurance Inspection (Programs)

Programs (Environmental Qualification) (9 Samples)

The inspectors evaluated environmental qualification program implementation by reviewing the licensed environmental qualification requirements for the following components and a sample of their associated subcomponents from March 19, 2018, to April 6, 2018:

- 1) Safety injection pump (SI-P-6A) discharge pressure flow transmitter (1-SI-FT-918) [differential pressure transmitter, rack wiring, and terminal block]
- 2) B power operated relief valve (PORV 1-RC-PCV-456-B) [pilot solenoid valve, position indication assembly, cable splice assembly, cable, and containment penetration]
- 3) Containment level, lower sensor (1-CBS-LE-2385-1) [level transmitter, cable splice assembly, cable, and containment penetration]
- 4) Pressurizer level transmitter (1-RC-LT-461) [level transmitter, cable splice assembly, cable, and containment penetration]
- 5) Containment sump isolation valve (1-CBS-V-8) Limitorque actuator and electrical feedthrough assembly [valve actuator, lubricant, terminal block, penetration, and insulated wire]
- 6) Emergency feedwater NAMCO limit switch (1-EPA-ZS-373) [limit switch, seal, and bolted splice]
- 7) ASCO solenoid valve (1-CAH-FY-34A) [solenoid valve]
- 8) 600V Okonite power cable to 1-EAH-FN-31B, containment enclosure return fan (1-EDE-CBL-1) [cable and Raychem motor connection kit]
- 9) A charging pump AC motor (1-CS-P-2-A) [motor, motor lubrication, motor insulation, and Raychem motor connection kit]

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report. On April 6, 2018, the inspector presented the design bases assurance inspection results to Mr. Chris Domingos, Site Director, and other members of NextEra staff.

DOCUMENTS REVIEWEDAudits and Self-Assessments

SBK 17-003, Design Engineering Nuclear Assurance Audit Report, dated 6/7/17
 SA 2247199, EQ Assessment in Preparation of NRC EQ Inspection, dated 2/15/18

Calculations

AR 1889230-01, 1-EAH-FN-31B (Cable BC1-NJ7) Qualified Life Extension Calculation, dated 8/30/13
 C-S-1-28006, Power Uprate Impact on Normal Operation Radiation Levels, Shielding Adequacy and 40 Year Radiation Environments in EQ Zones, Revision 0
 C-S-1-38017, Calculation of EQ Zone Total Integrated Radiation Dose Values for a 60 Year Plant Life, Revision 0
 C-S-1-70119, 5KV and 600V EQ Power Cables Service Temperatures, Revision 1
 Qualified Life Manual Calculation Report 1-EAH-FN-31B (Cable BC1-NJ7), dated 8/6/15

Corrective Action Condition Reports (CRs)

0124400	1957467	2084509	2200551	2255599*
0128747	1959384	2087070	2200750	2255639*
1783232	1964089	2089663	2202159	2256422*
1793733	1971963	2090726	2208874	2256655*
1836534	1981705	2094727	2235998	2256832*
1847661	1999258	2108071	2238649	2257792*
1848391	2022638	2112902	2248036	2257902*
1863802	2046092	2114585	2248141	2257988*
1877969	2055086	2120037	2248144	2257992*
1881685	2065282	2132520	2248147	2258120*
1889230	2065575	2175922	2252660	2258124*
1896834	2080299	2195522	2255348*	2258155*
1897312	2081772	2199833	2255365*	2258219*

*CR written as a result of this inspection

Engineering Evaluations

06MMOD534, EAH-FN-31B Motor Replacement, Revision 0
 08MSE210, Substitution of Mobil DTE 732 for Mobil 797, Revision 0
 90-04, ASCO Solenoid Valve Qualification, Revision 1
 94-080, Replacement Criteria for Damaged Sealtight Flexible Conduit, Revision 0
 0570-021-003, Thermal and Radiation Properties of Lubricants, Revision 1
 0570-032-005M, Thermal and Radiation Evaluation of Lubricants used in Safety-Related Equipment, Revision 0
 2208879-01, NOS Finding Governance and Oversight of the Equipment Qualification (EQ) Program Not Effective, dated 7/10/17
 EC 276290, Remove 1-COP-PDS-1788 & 1-COP-PDS-1789 from the EQ Program, Revision 0
 EC 284457, Process-Issue EQ Files for WEED RTDS, Revision 0
 EC 290025, Replacement of EAH-FN-31-B Cable BC1-NJ7, Revision 0
 EC 290098, Steam Generator Narrow Range and Pressurizer Transmitter Replacement with Rosemount 3150 Series (Outage 19), Revision 0
 EQ 2.2A (WO 0637488), 1-SI-F-918-EQR-IEQ1-000 Qualified Life Extension Calculation, dated 10/1/07
 FP 25561, Lubricant & Bearing Report for Medium, Large, & Chempump Motors, Revision 0
 FP 36114, EQ Form Wound Continuous Duty Insulation System, Revision 2
 MMOD 89-0535, PORV material upgrade, Revision 1
 MMOD 90-0584, PORV Seal Inboard Lead Sleeves, Revision 3

PMCR 2071786, Basis for a One Time EQ PM Due Date Extension for Cable BC1-NJ7 from PMCR 395975, dated 9/4/15
 PMCR 2201029, EQ Maintenance, Inspection and Lubrication for MOV 1-SW-V-15 and EQ Maintenance for Limitorque MOV Valve 1-SW-V-17, Revision 0
 Procurement Engineering Evaluation 317447, Commercial Grade Dedication of Foxboro Transmitter O-Ring, Revision 0
 Procurement Engineering Evaluation 463272, Commercial Grade Dedication of Crosby Limit Switch Cover Gasket, Revision 0

Equipment Qualification Files (EQFs)

EQF 113-03-01, Okonite Electric Cable, Revisions 5 & 6
 EQF 113-17-01, Anaconda 600V Control Cable, Revision 4
 EQF 118-01-01, Westinghouse Low Voltage Power, Control, and Instrumentation Electrical Penetrations, Revision 6
 EQF 118-03-01, Conax Corporation, Electric Conductor Seal Assembly, Revision 5
 EQF 171-01-01, Class 1E Instrument Rack Wiring and Terminal Blocks, Revision 6
 EQF 174-00-01, Foxboro Flow/Pressure Transmitter, Revisions 7 & 8
 EQF 174-15-01, Transamerica Delaval Gems Sensor Level Transmitter, Revision 6
 EQF 225-05-01, ASCO Model NP8321 Solenoid Valve, Revision 4
 EQF 236-11-01, ASCO Solenoid Valves, Revision 6
 EQF 248-37-01, Limitorque Valve Actuator, Revision 4
 EQF 248-47-01, Conax Corporation Power & Control Feedthrough Module, Revision 3
 EQF 600-01-01, Raychem Corporation, Heat Shrink Sleeve, Revision 3
 EQF 600-01-03, Raychem Motor Connection Kits, Revision 4
 EQF 600-01-04, Raychem 8Kv Motor Connection Kits, Revision 6
 EQF 600-01-07, Raychem model WCSF-N (Bolted) In-Line Splice Assembly, Revision 3
 EQF 600-06-01, NAMCO Model EC210 Series Receptacle and Connector/Cable Assembly, Revision 5
 EQF 600-19-01, NAMCO Limit Switch, Revision 6
 EQF 600-20-02, Medium Voltage Rewound Large AC Motors, Revision 4
 EQF 700-00-01, Rosemount Pressure/Level Transmitters, Revision 3
 EQF 700-00-02, Conduit Seal, Revision 2
 EQF NSS-220-05, Conax Corporation, Electric Conductor Seal Assembly, Revision 7
 EQF NSS-220-06, Garret (PORV) Solenoid Operated Pilot Valve and Position Indication Device, Revision 5

Maintenance Work Orders

00236199	40084950	40312729	40412396	40456397
00617586	40089179	40338998	40424432	40485657
00628996	40166999	40361768	40427554	40505121
00637488	40201080	40361770	40428357	40530930
40083759	40235037	40367106	40429596	

Procedures

ER-AA-112, Environmental Qualification Program, Revision 1
 EQ 2.2, Qualified Life Extension Calculation, Revision 12
 EQ 2.4, Ambient Temperature Verification, Revision 8
 EQ 2.5, Qualification Maintenance Requirement Data Sheets, Revision 8
 EQ 2.6, Engineering Design Standard for Shelf Life, Revision 5
 EQ 2.7, Preparation and Revision of Electrical EQ Files, Revision 7
 ES1807.020, Machinery Oil Analysis, Revision 3
 IS0603.034, Foxboro Transmitter Qualified Life Replacement, Revision 4
 IS0603.095, PORV Switch Solenoid Repair and Gasket Replacement, Revision 4
 IS0609.510, I&C Low Voltage Heat Shrink Installation, Revision 2

NUG NSC 4001, Performing a Procurement Engineering Evaluation, Revision 4
 QI-4-NSC-9, Procurement Engineering Control, Revision 11
 QI-7-NSC-1, Warehouse Receipt, Storage, Issuance and Maintenance, Revision 18
 SM 7.20, Control of Time Critical Operator Actions and Time Sensitive Actions, Revision 11
 SSEQ, Equipment Qualification Manual, Revision 19

Test Reports

45700-02, Wyle Nuclear Qualification Test Report for Level Transmitter and Receiver for Transamerica Delaval, Revision 2
 D8400102, Qualification Report for Pressure Transmitter Model 1154, Revision F
 D9900005, Qualification Report for Output Code R Op Amp Replacement, Revision B
 FP 31412, Okonite Insulated Cables Nuclear Qualification Document, Revision 6
 FP 35658, Nuclear EQ Test Program on Random and Form Wound Motor Insulation Systems for Schulz Electric Co., Revision 1
 FP 35949, Full Load Run Test Data for CS-P-2 S/N 2S-77, Revision 1
 FP 73912, N-E10 Transmitters Test Reports, Revision 3
 IPS-353.2, Qualification Test Report, Conax Low Voltage Control Service Classification Conductor Feedthru Assembly P/N 7641-21001, dated 6/20/79
 IPS-503, Qualification Report for Power & Control Feedthru Modules for Seabrook Station 1 and 2, dated 5/6/80
 QOAC10, Test Plan and Test Procedures for Class 1E Qualification of N-E10 Transmitters, Revision A
 Qualification Type Test Report, Limitorque Valve Actuators for PWR Service (Project #600456) dated 12/9/75
 WCAP-8687, Equipment Qualification Test Report for Garret (PORV) Solenoid Operated Pilot Valve and Position Indicating Device, Revision 1

Vendor Technical Manuals & Specifications

1-NHY-300230, Wiring System Notes and Typical Details, Revision 263
 00809-0100-4514, Model 1154 Alphaline Nuclear Pressure Transmitter, Revision AA
 00809-0100-4835, Rosemount 3150 Series Nuclear Pressure Transmitters, Revision BD
 ASCO 3-Way Solenoid Valves, Model 8300, Revision 0
 FP 52936, Charging/Safety Injection Pump Operation & Maintenance Manual, Revision 26
 FP 75609, Instruction Manual N-E11/N-E-13 Transmitter, Revision 3
 I-11154, Operation and Maintenance Instructions for Solenoid Power Operated Relief Valve, Revision 11-NHY-300228, Conduit System Notes and Typical Details, Revision 42
 IM-GEMS 3600, Gems 3600 Series Tank Level Indicating Transmitters, Revision 0
 UE&C Specification No. 9763-006-113-3, Specification for 600 Volt Power Cable, Revision 3
 UE&C Specification No. 9763-006-248-47, Containment Recirculation Sump Isolation Valve Encapsulations, Revision 5