NEXTera ENERGY SEABROOK

December 26, 2012

10 CFR 50.73

Docket No. 50-443
SBK-L-12267

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Seabrook Station

Licensee Event Report (LER) 2012-004-00

Manual Actuation of the Service Water Cooling Tower

Enclosed is Licensee Event Report (LER) 2012-004-00. This LER reports an event that occurred at Seabrook Station on October 31, 2012. This event is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

Should you require further information regarding this matter, please contact me at (603) 773-7745.

Sincerely,

NextEra Energy Seabrook, LLC

Michael O'Keefe
Licensing Manager

cc: NRC Region I Administrator
J. G. Lamb, NRC Project Manager
NRC Senior Resident Inspector

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resourse@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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4. TITLE

Manual Actuation of the Service Water Cooling Tower

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	31	2012	2012	- 004 -	00	12	26	2012	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE: 1

10. POWER LEVEL: 048

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Michael O'Keefe, Licensing Manager	603-773-7745

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)*	☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On October 31, 2012, during operation at approximately 48% power, the operators manually initiated a tower actuation (TA), which transferred the cooling water source for the train-A service water (SW) loop from the ocean to the cooling tower. The Atlantic Ocean serves as the normal ultimate heat sink; however, if the normal supply of cooling water from the ocean is unavailable, a mechanical draft cooling tower serves as the ultimate heat sink. A strainer is provided in each SW train to prevent shells and mussels from fouling the heat exchangers. During this event, SW was operating on the ocean and differential pressure across the train-A SW strainer increased above the alarm setpoint of 10 psid. In response to the high differential pressure, the operators initiated a TA in accordance with station procedures to transfer train-A SW operation to the cooling tower. Train-A SW operated on the cooling tower until 0430 on November 1, 2012, when the SW train was transferred back to the ocean.

The cause of fouling of the SW strainer was that debris laden screen wash water bypassed the spray header strainers and deposited debris in the traveling screen spray nozzle, resulting in carryover of ocean debris to the suction of the SW pumps. The corrective action for this event includes replacing the degraded spray header strainers. No adverse consequences resulted from this event.

NARRATIVE

Description of Event

On October 31, 2012, at 10:07 am during operation at approximately 48% power, the operators manually initiated a tower actuation (TA), which transferred the cooling water source for the train-A service water (SW) loop from the ocean to the cooling tower. The Atlantic Ocean serves as the normal ultimate heat sink; however, if the normal supply of cooling water from the ocean is unavailable, a mechanical draft cooling tower serves as the ultimate heat sink. A strainer is provided in each SW train to prevent shells and mussels from fouling the heat exchangers. During this event, SW was operating on the ocean and differential pressure across the train-A SW strainer increased above the alarm setpoint of 10 psid. In response to the high differential pressure, the operators initiated a TA in accordance with station procedures to transfer train-A SW operation to the cooling tower. Train-A SW operated on the cooling tower until 0430 on November 1, 2012, when the SW train was transferred back to the ocean.

Cause of Event

The cause of fouling of the SW strainer was that debris laden screen wash water bypassed the spray header strainers and deposited debris in the traveling screen spray nozzle, resulting in carryover of ocean debris to the suction of the SW pumps.

Analysis of the Event

The SW system consists of two completely independent and redundant trains with two ocean pumps [BI, P] and one cooling tower pump [BS, P] in each train. Two sources of cooling water are provided for the SW system: the Atlantic Ocean and the cooling tower. The normal source of water for the SW system is the ocean through two tunnels, one tunnel from the submerged intake structure offshore and a second tunnel that discharges cooling water to the ocean. Because the tunnels are not designed for a safe shutdown earthquake, a cooling tower serves as the ultimate heat sink during a seismic event that results in blockage of the ocean tunnels. While the ocean serves as the normal supply of cooling water, heat loads can be automatically or manually transferred to the cooling tower. A low discharge pressure on the ocean SW pump will initiate a TA signal, which automatically starts the cooling tower pump and aligns the affected train for operation on the cooling tower. Similarly, manual actuation of a TA signal will initiate an automatic transfer of the associated SW train to the cooling tower.

Each SW train includes a basket-type strainer located downstream of the pumps, and high differential pressure across the strainer actuates an alarm [BI, ALM] in the control room at 10 psid. During this event, the operators initiated a TA on train-A SW in response to an increasing strainer differential pressure that exceeded the alarm setpoint. Strainer differential pressure is not the initiating parameter that actuates the cooling tower to perform its design function as the ultimate heat sink following a seismic event. After transferring SW train-A operation to the cooling tower, the operators bypassed and isolated the SW strainer. Train-A SW operated on the cooling tower from approximately 1007 on October 31, 2012 until 0430 on November 1, 2012, when the SW train was transferred back to the ocean.

The ocean water supply to the SW system passes through traveling screens [BI, SCN] that remove debris from the water prior to entering the SW fore bay where the SW pumps take suction. Screen wash water, which is pumped from the SW fore bay and through strainers, is sprayed through nozzles to remove debris that is collected on the screens. During this event, debris laden screen wash water bypassed the strainers due to degradation in the strainers, and caused blockage of the spray nozzle in the train-A traveling screen. As a result, debris that accumulated on the screens carried over into the SW pump suction and entered the SW system. The partial fouling of the SW strainer did not render the ocean-supplied SW loop incapable of providing required cooling water flow. An evaluation of system performance during the event found the system capable of delivering approximately 3000 gallons per minute more than the minimum required flow. Additionally, the evaluation concluded that continued operation of the SW loop on the ocean would not have resulted in further blockage in the SW strainer. Therefore, reasonable assurance exists that the ocean-supplied SW loop remained capable of performing its design function.

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NARRATIVE

This event resulted in a valid manual actuation of the SW cooling tower and met the reporting criteria of 10 CFR 50.73(a)(2)(iv) for actuation of an emergency service water system that does not normally run and that serves as an ultimate heat sink. The operators responded to the event in accordance with approved procedures. No adverse consequences resulted from this event, and this incident had no adverse impact on the health and safety of the public or the plant and its personnel. This event did not involve a safety system functional failure. No inoperable structures, systems, or components contributed to this event.

Corrective Actions

The corrective action for this event includes replacing the degraded spray header strainers.

Similar Events

A review of the corrective action program and previous LERs identified no similar events in the last five years.

Additional Information

The Energy Industry Identification System (EIIS) codes are included in this LER in the following format: [EIIS system identifier, EIIS component identifier].