

June 2, 2014 10 CFR 50.73

Docket No. 50-443 SBK-L-14098

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

> Seabrook Station Licensee Event Report (LER) 2014-002 Reactor Coolant Pump Undervoltage Time Delay Relays Exceed Acceptance

Enclosed is Licensee Event Report (LER) 2014-002. This LER reports a condition that was discovered at Seabrook Station on April 6, 2014. This event is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B), 50.73(a)(2)(v)(A) and 50.73(a)(2)(vii).

Should you require further information regarding this matter, please contact me at (603) 773-7512.

Sincerely,

NextEra Energy Seabrook, LLC

Michael<sup>4</sup>H

Licensing Manager

cc: W. Dean, NRC Region I AdministratorJ. G. Lamb, NRC Project ManagerP. Cataldo, NRC Senior Resident Inspector

NextEra Energy Seabrook, LLC.

626 Lafayette Rd, Seabrook, NH 03874

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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION						SION	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017						
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NARRATIVE								

# **Description of Event**

On April 6, 2014, while the plant was in refueling outage sixteen (OR16), it was determined during surveillance testing that three of four reactor coolant pump (RCP) [AB, P] undervoltage (UV) reactor trip channels exceeded the Technical Specification (TS) channel response time acceptance criteria of 1.5 seconds for the RCP UV reactor trip function. The channel response time was exceeded because the RCP UV time delay relays (62V) [AB 27] exceeded their maximum allowable response time. The condition for the RCP UV time delay relays exceeding tolerance was experienced on all four channels; however, only three of the four channels did not meet their TS required response times. Since this condition involved multiple similar components, there is evidence indicating that this condition may have arisen over time and three channels of RCP UV were inoperable. This resulted in the plant operating in a condition prohibited by the TS from September 20, 2012 (last calibration date for 1-RC-P-1-C relay) to April 1, 2014.

## **Cause of Event**

The cause of the event is currently being evaluated. This LER will be supplemented when the cause and corrective actions are determined.

## Analysis of the Event

An out of tolerance condition was experienced on all four RCP 62V relays during OR16. The out of tolerance condition was identified during surveillance testing and resulted in three of four RCP UV trip channels exceeding their allowable response time.

Surveillance requirement (SR) 4.3.1.2 requires verification of the response time of each reactor trip function listed in TS Table 3.3-1, Reactor Trip System Instrumentation, every 18 months. The response time for the RCP UV reactor trip channel is  $\leq$  1.5 seconds. During the 18 month surveillance testing of the RCP 62V relays, three of the four RCP UV relays exceeded their maximum allowable response time, resulting in the undervoltage reactor trip channels exceeding the limit of  $\leq$  1.5 seconds.

TS 3.3.1, Reactor Trip System Instrumentation, requires four channels of RCP UV instrumentation in Mode 1 and provides an action for the case that one RCP channel is inoperable. For this condition, however, three channels of RCP UV were inoperable due to failure to meet the time response requirement of SR 4.3.1.2. Because no action addresses more than one channel inoperable, TS 3.0.3, which requires a timely plant shutdown, would be applicable to this condition. Plant operation with three RCP UV channels inoperable exceeded the shutdown times specified in TS 3.0.3; therefore, the condition resulted in an operation or condition prohibited by the TS. This condition existed from the time the relays were last calibrated in refueling outage fifteen (September 20, 2012) until the plant entered refueling outage sixteen (April 1, 2014).

This condition is being reported as a Safety System Functional Failure under 10 CFR 50.73(a)(2)(v)(A) as the condition involved the failure of a reactor trip function credited for shutdown of the reactor and mitigation of consequences of an accident.

This condition is also being reported under 10 CFR 50.73(a)(2)(vii)(A) as it involved the failure of an RCP UV reactor trip function credited for shutdown of the reactor and mitigation of consequences of an accident and caused multiple channels to become inoperable. During OR16 surveillance testing, all four RCP UV time delay relays exceeded their response time acceptance criteria. As a result three of the four channels exceeded their TS channel response time for the RCP UV trip function.

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NARRATIVE										

Although determined to be a Safety System Functional Failure, the millisecond delays in reactor trip signal on RCP UV is not risk significant because the RCP UV trip signal is one of several redundant and diverse reactor trip signals in the reactor protection system. The RCP UV trip, along with the RCP underfrequency trip, serve as a backup to the low reactor coolant system (RCS) [AB] flow trip, which provides protection for a partial loss of RCS flow. The three trips also provide protection for a complete loss of RCS flow. The observed behavior in each UV trip circuit included a slight extension (0.0067, 0.0289 and 0.1165 second) in the total circuit actuation time, not a failure of the circuit to actuate. Although the actuation time exceeded the TS response time limit, the additional actuation time is very small and would have negligible impact on plant risk. In addition, the RCP underfrequency trip, the RCS low flow trip, and manual trip provided redundant reactor trip capability during this event. The Station intends to not count this event as an SSFF in the 2<sup>nd</sup> Quarter 2014 indicator as the condition would not have caused the reactor to fail to trip.

# **Corrective Actions**

The following corrective actions were completed

1-RC-P-1-B undervoltage relay was replaced with a new relay and adjusted to the required response time.

1-RC-P-1-C and 1-RC-P-1-D undervoltage relays were adjusted to the required response times.

# **Similar Events**

LER 2012-001 and 2012-002 reported inadequate testing of response times. The reports documented that surveillance testing had not verified the response time of emergency feedwater relays (LER 2012-001) and reactor trip breaker shunt trip circuits (LER 2012-002). These events resulted from ineffective methods utilized in the mid 1980's to verify that surveillance test procedures ensured compliance with the TS.

# Additional Information

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