



February 18, 2016

NG-16-0023
10 CFR 50.73

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

Duane Arnold Energy Center
Docket 50-331
Renewed Op. License No. DPR-49

Licensee Event Report 2015-006

Please find attached the subject report submitted in accordance with 10 CFR 50.73. This letter makes no new commitments or changes to any existing commitments.

A handwritten signature in black ink, appearing to be "T. A. Vehec".

T. A. Vehec
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

cc: Administrator, Region III, USNRC
Project Manager, DAEC, USNRC
Resident Inspector, DAEC, USNRC

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LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

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 and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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.

1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET NUMBER 05000-331	3. PAGE 1 OF 4
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4. TITLE
HPCI and RCIC Condensate Storage Tank Suction Transfer Inoperable

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
7	23	2015	2015	006	00	2	18	2016	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL 100%	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT Bob Murrell, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (319) 851-7900
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On July 23, 2015, while operating at 100% power, with no structures, systems, or components inoperable that contributed to this event, during the performance of Surveillance Test Procedure (STP) 3.5.3-05, RCIC/HPCI Suction Transfer Interlock, the Condensate Storage Tank (CST) Low Level HPCI and RCIC Suction Swap Relay, E41A-K059, as-found time to trip was 19.86 seconds. This was outside the relay design band of 0.0-5.0 seconds. This condition resulted in the HPCI/RCIC CST suction swap function being inoperable. Technical Specification (TS) require HPCI and RCIC to be declared inoperable within 1 hour from the discovery of the inoperable support feature. HPCI and RCIC were not declared inoperable and therefore, this condition meets the reporting requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(A) and (D).



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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NARRATIVE

I. Description of Event:

On July 23, 2015, while operating at 100% power, with no structures, systems, or components inoperable that contributed to this event, during the performance of Surveillance Test Procedure (STP) 3.5.3-05, RCIC/HPCI Suction Transfer Interlock, the Condensate Storage Tank (CST) Low Level HPCI (High Pressure Coolant Injection) and RCIC (Reactor Core Isolation Cooling) Suction Swap Relay, E41A-K059, as-found time to trip was 19.86 seconds. This was outside the relay design band of 0.0-5.0 seconds and the STP acceptance band of 1.50-2.00 seconds. This condition resulted in the HPCI/RCIC CST suction swap function being inoperable. At the time, this failure was considered a non-TS failure. The relay was recalibrated to meet the STP acceptance band. On October 2, 2015, during the performance of STP 3.5.3-05, the relay once again was found out of tolerance. The relay was tested a second time and was found within the acceptable band. An immediate operability evaluation determined the suction swap function was operable and an operability evaluation was requested. As compensatory measure, HPCI was aligned to the Torus. While performing troubleshooting on October 8, 2016, it was determined that the suction swap relay was inoperable.

Technical Specification Requirements

Technical Specification (TS) 3.3.5.1, Action D.1 requires HPCI to be declared inoperable within 1 hour from the discovery of a loss of the HPCI suction transfer capability if not aligned to the suppression pool.

TS 3.3.5.2, Action D.1 requires RCIC to be declared inoperable within 1 hour from the discovery of a loss of the HPCI suction transfer capability if not aligned to the suppression pool.

TS 3.5.1, Action F.2 requires HPCI to be restored to operable status within 14 days. If this action is not completed, TS require the plant to be in Mode 3 within 12 hours of exceeding the 14 days.

TS 3.5.3, Action A.1 requires RCIC to be restored to operable status within 14 days. If this action is not completed, TS require the plant to be in Mode 3 within 12 hours of exceeding the 14 days.

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Since the suction of RCIC and HPCI are normally aligned to the CST, the inoperability of the suction source swap function makes the supported SSCs (RCIC and HPCI) inoperable from July 23, 2015 until the suction source was manually swapped to the Torus. When this condition was discovered on October 2, 2015, HPCI suction was manually transferred to the Suppression Pool. However, RCIC suction was not transferred to the Suppression Pool and was therefore inoperable from July 23, 2015 until the condition was corrected on October 8, 2015. Both RCIC and HPCI inoperability times exceeded their LCO duration of 14 days. Therefore, this condition meets the reporting requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(A) and (D).

II. Assessment of Safety Consequences:

The safety significance of instrumentation used to initiate transfer of HPCI system or RCIC system suction source from the CSTs to the suppression pool is low because the CSTs have a sufficient supply of water for meeting the transient and accident requirements of these systems. Both CSTs are required to be maintained above 8 feet to ensure 75,000 gallons is held in reserve for the HPCI system and RCIC system and to maintain HPCI and RCIC keep fill requirements. At a minimum level of 8 feet there is adequate storage capacity for both HPCI and RCIC to operate at design flow for 35 minutes before the Lo-Lo level is reached. Using additional conservatism, when the CST level reaches 6 feet the condensate service pumps trip to ensure no other systems are drawing down the CST. Even at a volume corresponding to a starting point of 6 feet both HPCI and RCIC could operate at design flow for 25 minutes before the Lo-Lo level is reached. Under the bounding condition for operation of HPCI, it is assumed during a small break LOCA that the reactor is depressurized after 10 minutes by operator action via a rapid depressurization using SRVs (Ref. 18). Thus it is expected that the suction transfer would not be required before the operators depressurize the reactor.

In addition, if the Lo-Lo CST level is reached, three annunciators are expected. Annunciator 1C03C (D-3) is activated via the time delay relay E41A-K059. However, annunciators 1C06A (C-8) and (C-9) will also occur when CST level reaches the Lo-Lo CST set point. While not credited as a required operator action, the Annunciator Response Procedure for 1C06A (C-8) and (C-9) direct an operator action to verify that the Suppression Pool Suction valves for HPCI and RCIC have cycled open. This step directs the operators to open the valves if the automatic function did not occur.

III. Cause of Event:

An Apparent Cause Evaluation (ACE) was completed. The ACE determined that the control room operators failed to address the current licensing basis with respect to the CST suction swap time delay.

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IV. Corrective Actions:

Immediate Corrective Action

On October 8, 2015, the time delay relay was replaced and subsequently tested satisfactorily.

Corrective Actions for Cause of Event

STP 3.5.3-05 was revised to include the current licensing basis for the time delay relay.

V. Additional Information:

Previous Similar Occurrences:

A review of NextEra Energy Duane Arnold Licensee Event Reports from the previous three years found no other instances of events related to the CST suction swap relay failure.

EIIS System and Component Codes:

KA - Condensate Storage and Transfer System

Reporting Requirements:

This activity is being reported pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) (for both HPCI and RCIC) and 10CFR50.73(a)(2)(v)(A) and (D) (for HPCI).