



January 31, 2012

NG-12-0045  
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  
License No. DPR-49

Licensee Event Report #2012-001-00

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 read "P. Wells", is positioned above the typed name.

Peter Wells  
Vice President, Duane Arnold Energy Center  
NextEra Energy Duane Arnold, LLC

**LICENSEE EVENT REPORT (LER)**

(See reverse 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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-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.

<b>1. FACILITY NAME</b> Duane Arnold Energy Center	<b>2. DOCKET NUMBER</b> 05000331	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Inoperability of Low Pressure Coolant Injection Due to Discharge Line Voiding

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	DOCUMENT NUMBER
12	02	11	2012	001	0	01	31	12	N/A	05000
									FACILITY NAME	DOCUMENT NUMBER
									N/A	05000

<b>9. OPERATING MODE</b> 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)			
<b>10. POWER LEVEL</b> 100%	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" 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)
	<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 type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> VOLUNTARY LER

**12. LICENSEE CONTACT FOR THIS LER**

NAME Robert J. Murrell, Engineering Analyst	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					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH 03	DAY 8	YEAR 2012
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**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On December 2, 2011, while operating at 100% power, with no Technical Specification (TS) Limiting Condition for Operability (LCO) in effect, Ultrasonic Testing (UT) examination of the 'B' Residual Heat Removal (RHR) (IEEE System Code BO) injection line identified an air void of approximately 1.5-2 cubic feet. A void of this size had not previously been analyzed and therefore, the Low Pressure Coolant Injection (LPCI) system was declared inoperable at 1311. On December 3, 2011, after operating RHR in the torus cooling mode, venting of the system, acceptable UT examination results, and completion of an engineering evaluation, LPCI was declared operable at 1650. The cause of this event was inadequate design of the 'B' RHR inject line vent pipe location. This design deficiency was corrected on December 9, 2011.

During the time that LPCI was inoperable, all other Emergency Core Cooling Systems (ECCS) were fully operable and capable of performing their safety functions. As of the date of this Licensee Event Report (LER), the impact of the void discovered on December 2, 2011 is unknown. Engineering analysis of the void is currently ongoing and a supplemental LER is expected to be submitted by March 8, 2012.

Based on the information known at the time of discovery, this event did result in a Safety System Functional Failure and was reported under 10CFR50.72(b)(3)(v)(B) on December 8, 2011, reference Event Notification 47511.

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

1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET 05000 - 331	6. LER NUMBER			3. PAGE 2 OF 3
		YEAR 2012	SEQUENTIAL NUMBER 001	REV NO. 0	

**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

**I. Description of Event:**

On December 2, 2011, while operating at 100% power, with no Technical Specification (TS) Limiting Condition for Operation (LCO) in effect, Ultrasonic Testing (UT) examination of the 'B' Residual Heat Removal (RHR) injection line identified an air void of approximately 1.5-2 cubic feet. At the time of discovery, there was insufficient analysis to ensure the system could perform its intended function, therefore the Low Pressure Coolant Injection (LPCI) system was declared inoperable at 1311. The inject line was vented and a second UT examination determined the size of the void had been reduced to approximately 1 cubic foot. To ensure no additional air was hiding out in the system, the 'B' RHR system was operated in the torus cooling mode for approximately 4 hours. A third UT examination determined that the void size was relatively unchanged by operation of the system. On December 3, 2011, the system was filled and vented per procedure. The performance of this evolution verified that venting the system was adequate to remove air from the system with the exception of the 1 cubic foot void. After completion of an engineering evaluation that concluded the 1 cubic foot void had no impact on operability of the system, LPCI was declared operable at 1650.

**II. Assessment of Safety Consequences:**

During the time that LPCI was inoperable, all other Emergency Core Cooling Systems (ECCS) were fully operable and capable of performing their safety functions. As of the date of this Licensee Event Report (LER), the impact of the void with regards to the past operability of LPCI and other RHR modes is unknown. Engineering analysis of the void is currently ongoing and a supplemental LER is expected to be submitted by March 8, 2012.

Based on the information known at the time of discovery, this event resulted in a Safety System Functional Failure and was reported under 10CFR50.72(b)(3)(v)(B) on December 8, 2011, as an event or condition that could have prevented fulfillment of a safety function. Reference Event Notification 47511.

**III. Cause of Event:**

An apparent cause evaluation (ACE) was completed. The ACE determined the cause of the event to be from an inadequate design of the 'B' LPCI inject line vent. Specifically, the high point vent location was not located at the horizontal pipe high point. Contributing to this event was an inadequate walk down of the piping in response to Generic Letter (GL) 2008-001, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems.

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

1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET 05000 - 331	6. LER NUMBER			3. PAGE 3 OF 3
		YEAR 2012	SEQUENTIAL NUMBER 001	REV NO. 0	

**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

**IV. Corrective Actions:**

On December 9, 2011, a modification was completed that installed a new vent at the high point on the 'B' LPCI inject line. This modification was successful in reducing the void size to less than 0.1 cubic foot.

To address the extent of condition and contributing causes for this event, the following actions will be completed.

1. Review the high point vent locations for horizontal piping for the GL 2008-001 systems to ensure the vent connections are installed on horizontal piping runs at the top center of the applicable pipes.
2. Operating procedures will be revised to ensure that GL 2008-001 horizontal piping section are examined by UT upon return to service following maintenance or re-alignment to standby readiness conditions from secondary modes of operation to preclude unacceptable voiding.
3. Installation of a similar vent on the 'A' LPCI inject line.

**V. Additional Information:**

Previous Similar Occurrences:

A review of License Event Reports from the past 5 years did not identify any previous similar occurrences where a system was incapable of performing its safety function as a result of excessive voiding.

EIIS System and Component Codes:

BO- Residual Heat Removal/Low Pressure Coolant Injection System

Reporting Requirements:

This event is being reported as an Event or Condition that Could Have Prevented Fulfillment of a Safety Function, 10CFR50.73(a)(2)(v)(B and D) and a Common-cause Inoperability of Independent Trains or Channels, 10CFR50.73(a)(2)(vii). Additionally, this event was reported under 10CFR50.72(b)(3)(v)(B), Specified System Actuation, reference Event Notification 47511.