



October 10, 2011

NG-11-0381
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 #2011-002-00

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 "Peter Wells".

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, 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 05000331	3. PAGE 1 OF 4
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4. TITLE
Loss of Ultimate Heat Sink and Completion of Technical Specification Required Shutdown

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
08	11	11	2011	002	0	10	10	11	N/A	05000
									N/A	05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<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 checked="" 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 checked="" 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					

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
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)
 On August 11, 2011 at 0008, while operating at 100% power, both trains of River Water Supply (RWS) were declared inoperable due to the failure of river Intake Structure traveling screens. This required entry into Technical Specification (TS) 3.7.2, River Water Supply System and Ultimate Heat Sink, Condition B, Both RWS subsystems inoperable. This Limiting Condition for Operation (LCO) requires that the reactor be in Mode 3 within 12 hours and Mode 4 within 36 hours. The LCO was entered because of the high indicated differential pressure on the intake traveling screens and their inability to be rotated. Subsequent inspections of the Intake Structure found several feet of sand in the forebay and pump pit areas. The required action to be in Mode 3 was completed at 1138 with the insertion of a manual scram. Upon inserting the manual scram, reactor water level dropped below 170 inches resulting in Primary Containment Isolation System (PCIS) Groups 2, 3 and 4 being received. This reactor water level response is considered normal following a reactor scram from power due to void collapse in the reactor vessel. The PCIS isolations all functioned properly. This event was caused by inadequate management of river sediment buildup.

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), a Common-cause Inoperability of Independent Trains or Channels, 10CFR50.73(a)(2)(vii), and Completion of a TS Required Shutdown, 10CFR50.73(A)(2)(i)(A), reference EN 47142. Additionally, this event was reported under 10CFR50.73(A)(2)(iv)(A), Specified System Actuation, reference Event Notification 47143. There were no actual safety consequences and no effect on public health and safety as a result of this event.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET 05000 - 331	6. LER NUMBER			3. PAGE 2 OF 4
		YEAR 2011	SEQUENTIAL NUMBER 002	REV NO. 0	

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

I. Description of Event:

Event Background

Sediment build-up and intrusion into the site's Intake Structure has been a consideration from the original design of the plant. Several river management initiatives have been completed to minimize the impact of river changes such as sediment build-up and river flow changes. These include the 2006 installation of spur dikes that were intended to straighten the riverbank to original river bands. This would direct flow in front of the intake structure, narrow the river channel, and create faster flows past the intake, thus sweeping away sediment from in front of the intake structure. As part of monitoring the performance of the spur dikes, periodic river surveys were completed to determine if any degradation had occurred. The 2007 survey noted that due to flood-like conditions over the spur dikes, the spur dikes could be degraded. As a result of this, actions were initiated to repair degraded river banks opposite of the spur dikes and the spur dikes themselves. Subsequent decisions resulted in only the river banks being repaired. Therefore, unknown to plant personnel, damaged spur dikes had caused the river flow to be different than that assumed in the original design resulting in abnormal amounts of sediment build-up in the area in front of the Intake Structure. Another action put in place to minimize sediment buildup was periodic river mapping. Prior to this event, river mapping was scheduled to be performed in July of 2011. However, the mapping was cancelled based on recent Intake Structure forebay inspections that revealed more than adequate depth of water. Therefore, the affect of the degraded spur dikes and subsequent changes in sediment build-up resulted in sediment avalanche into the Intake Structure.

Event

On August 10, 2011, while operating at 100% power, the site performed Surveillance Test Procedure (STP) NS100102A, 'A' River Water Supply and Screen Wash System Vibration Measurement and Operability Test. This STP requires running both the 'A' side RWS pumps at full flow for an extended period of time. While conducting this STP, both the 'A' and 'B' side traveling screens failed due to being excessively clogged with sand. Per the requirements of Operating Instruction (OI) 410, River Water Supply, Precaution and Limitation (P&L) number 3, if a train's traveling screen is inoperable, then the associated train of RWS is inoperable. Based on this, on August 11, 2011 at 0008, both trains of RWS were declared inoperable. This required entry into Technical Specification (TS) 3.7.2, River Water Supply System and Ultimate Heat Sink, Condition B, Both RWS subsystems inoperable. This Limiting Condition for Operation (LCO) requires that the reactor be in Mode 3 within 12 hours and Mode 4 within 36 hours. The LCO was entered because of the high indicated differential pressure on the intake traveling screens and the inability to rotate them. Subsequent inspections of the Intake Structure found several feet of sand in the forebay and pump pit areas. The required action to be in Mode 3 was completed at 1138 with the insertion of a manual scram. Upon inserting the manual scram, reactor water level dropped below 170 inches resulting in Primary Containment Isolation System (PCIS) Groups 2, 3 and 4 signals being received. This reactor water level response is considered normal following a reactor scram from power due to void collapse in the reactor vessel. The PCIS isolations all functioned properly. This event was caused by inadequate management of river sediment buildup.

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

II. Assessment of Safety Consequences:

The event had no risk from a nuclear or industrial safety perspective. Prior to and throughout the event, adequate water was available to the River Water Supply pumps. However, in addition to water availability, the accumulation of sand is of concern. The potential existed for sand bars to form and isolate the intake structure from the UHS. Although that did not occur in this case, diligent monitoring of river conditions, in conjunction with subsequent corrective actions, is essential in maintaining the UHS available. Furthermore, a subsequent evaluation determined that the RWS system was functional at the time of this event.

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), a Common-cause Inoperability of Independent Trains or Channels, 10CFR50.73(a)(2)(vii), and Completion of a TS Required Shutdown, 10CFR50.73(A)(2)(i)(A), reference EN 47142. Additionally, this event was reported under 10CFR50.73(A)(2)(iv)(A), Specified System Actuation, reference Event Notification 47143. There were no actual safety consequences and no effect on public health and safety as a result of this event.

This event did result in a Safety System Function Failure.

III. Cause of Event:

A Root Cause Evaluation was completed for this event. The evaluation determined that there were two root causes for this event. First was a failure to perform river mapping activities as scheduled. The required mapping was cancelled based on a lack of understanding problems that result from sand build-up near the Intake Structure. The second root cause was the failure to implement hydrologist recommendations to conduct river surveys after periods of high river water levels such as those seen prior to the event.

IV. Corrective Actions:

On August 15, 2011, actions were completed to restore the traveling screens ability to rotate by removing the excessive sediment.

The following actions are planned to address the root cause of this event and restore the spur dikes and river channel to its desired flow pattern.

1. Annotate the Preventive Maintenance basis for the spur dikes and their associated model work orders to state that implementation of these tasks may not be cancelled without considering the findings of root cause evaluation that installed the spur dikes.
2. Establish a preventive maintenance task to survey the river and inspect the spur dikes after flood conditions.

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

- Complete the design change to repair spur dikes and perform dredging as necessary to return the river to its desired flow pattern.

V. Additional Information:

Previous Similar Occurrences:

A review of License Event Reports from the past 5 years did not identify any previous similar occurrences.

EIIS System and Component Codes:

BS - Ultimate Heat Sink 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), a Common-cause Inoperability of Independent Trains or Channels, 10CFR50.73(a)(2)(vii), and Completion of a TS Required Shutdown, 10CFR50.73(A)(2)(i)(A), reference EN 47142. Additionally, this event was reported under 10CFR50.73(A)(2)(iv)(A), Specified System Actuation, reference Event Notification 47143. There were no actual safety consequences and no effect on public health and safety as a result of this event.