



January 7, 2011

NG-11-0008  
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 #2010-006-00

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, reading "Christopher R. Costanzo". The signature is written in a cursive, flowing style.

Christopher R. Costanzo  
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

## 4. TITLE

Standby Liquid Control Test Tank Seismic Analysis

## 5. EVENT DATE

MONTH	DAY	YEAR
11	10	10

## 6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2010	006	0

## 7. REPORT DATE

MONTH	DAY	YEAR
01	07	11

## 8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCUMENT NUMBER
N/A	05000
FACILITY NAME	DOCUMENT NUMBER
N/A	05000

## 9. OPERATING MODE

5

## 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 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 checked="" 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 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)	VOLUNTARY LER

## 10. POWER LEVEL

0%

## 12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Robert J. Murrell, Engineering Analyst	(319) 851-7900

## 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

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED  
SUBMISSION  
DATE

MONTH	DAY	YEAR

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

As part of an Operating Experience review (Event Notification 46372), the seismic analysis for the Standby Liquid Control (SBLC) System test tank was questioned. On November 10, 2010, engineering analysis concluded that when the test tank was  $\frac{3}{4}$  full of water, as directed by SBLC surveillance test procedures (STPs), it would not withstand Design Basis Earthquake (DBE) seismic loads and would possibly have caused a failure of safety-related, seismically qualified SBLC equipment. Therefore it has been concluded that the SBLC system was not operable in the past when the test tank was  $\frac{3}{4}$  full of water. The SBLC test tank was drained of water on November 11, 2010. Corrective actions taken included revising applicable procedures to require that the SBLC test tank be drained when the SBLC system is required to be operable.

The cause of this event was a latent design issue that occurred during construction.

This event is being reported as an event or condition that at the time of discovery could have prevented fulfillment of a safety function under 10 CFR 50.73 (a)(2)(v)(A)/(D), a condition prohibited by Technical Specifications (TS) under 10 CFR 50.73 (a)(2)(i)(B), and a common-cause inoperability of independent trains or channels under 10 CFR 50.73 (a)(2)(vii).

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 2010	SEQUENTIAL NUMBER 006	REV NO. 0	

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

**I. Description of Event:**

On October 29, 2010 with the reactor shutdown for Refuel Outage (RFO) 22, a Condition Report (CR) was written requesting a review for applicability of NRC Event Notification 46372. The event, which occurred at LaSalle County Station, involved the seismic qualification of their SBLC Test Tank. Based on a question from the Nuclear Regulatory Commission (NRC) during a Component Design Basis Inspection (CDBI), LaSalle had determined that their SBLC Test Tanks were not seismically qualified while filled with water and could fail during a seismic event, potentially causing a failure of safety-related, seismically qualified SBLC equipment located near-by.

On November 10, 2010, engineering analysis determined that when the Test Tank was  $\frac{3}{4}$  full of water, as directed by Surveillance Test Procedures (STP), it could not withstand Design Bases Earthquake (DBE) seismic loads and would possibly have caused a failure of the safety-related, seismically qualified SBLC equipment during a DBE seismic event.

**II. Assessment of Safety Consequences:**

The safety significance of this event is minimal. The safety function of the SBLC system is to provide a backup method, independent of the control rods, to initiate a reactor shutdown and maintain the reactor subcritical as the nuclear system cools. The probability of a DBE seismic event concurrent with an Anticipated Transient Without Scram (ATWS) condition is very low. Additionally, in the event that boron injection is required but cannot be injected using the SBLC system, procedures provide guidance for utilizing the Reactor Water Cleanup (RWCU) system as an alternative means of injecting boron solution into the reactor vessel to shut down the reactor.

This event is being reported as an event or condition that at the time of discovery could have prevented fulfillment of a safety function under 10 CFR 50.73 (a)(2)(v)(A)/(D), a condition prohibited by Technical Specifications (TS) under 10 CFR 50.73 (a)(2)(i)(B), and a common-cause inoperability of independent trains or channels under 10 CFR 50.73 (a)(2)(vii).

This event did result in a Safety System Functional Failure.

**III. Cause of Event:**Apparent Cause:

A cause evaluation was completed for this event. The evaluation determined that the cause of this event was from a latent design issue that occurred during design and construction of the plant. Before the plant was licensed, design rules changed when NRC Safety Guide #29 was issued in June of 1972.

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

At the time of implementing the Safety Guide, the site failed to properly implement the requirements for the SBLC system. The SBLC Test Tank was not re-designed to include the requirements of the Safety Guide (i.e. 2 over 1 seismic requirement) prior to plant start-up.

Contributing Causes:

1. The failure to originally design (prior to the implementation of Safety Guide #29) the SBLC Test Tank to withstand the effects of a DBE.
2. The evolving regulatory requirements during plant design and construction. The Safety Guide was implemented between the time that the SBLC Test Tank was designed and the plant started up. This led to installing the test tank without ensuring that it would not cause the failure of the SBLC system during a DBE.
3. The requirement to maintain the SBLC Test Tank full of water following completion of routine STPs.

**IV. Corrective Actions:**

Corrective Actions Taken to Address Apparent Cause:

The SBLC procedures were revised to require that the Test Tank be empty when the SBLC system is required to be operable.

Corrective Actions Needed to Address Contributing Causes:

1. Develop design basis calculation qualifying the SBLC Test Tank as seismically adequate when empty.
2. Review Operating procedures and ensure that leaving the Test Tank empty is an acceptable long term solution.

Corrective Actions Needed to Address Extent of Condition:

The site will perform a Seismic Qualification Utility Group (SQUG) type walk down to assure seismic ruggedness of other non safety-related mechanical test equipment used for testing safety-related systems that are not included on the Safe Shutdown Equipment List. This walk down will verify that this equipment cannot cause a failure of the safety-related system during a DBE.

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		YEAR 2010	SEQUENTIAL NUMBER 006	REV NO. 0	

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

**V. Additional Information:**

Previous Similar Occurrences:

A review of Licensed Event Reports (LERs) from the past 5 years did not identify any previous similar occurrences.

EIIS System and Component Codes:

BR – Standby Liquid Control System (BWR)

Reporting Requirements:

This event is being reported as an event or condition that at the time of discovery could have prevented fulfillment of a safety function under 10 CFR 50.73 (a)(2)(v)(A)/(D), a condition prohibited by Technical Specifications (TS) under 10 CFR 50.73 (a)(2)(i)(B), and a common-cause inoperability of independent trains or channels under 10 CFR 50.73 (a)(2)(vii).