



FPL Energy.

Duane Arnold Energy Center

FPL Energy Duane Arnold, LLC
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March 5, 2009

NG-09-0219
10 CFR 20.2203

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 #2009-002-00

Please find attached the subject report submitted in accordance with 10 CFR 20.2203. This letter makes no new commitments or changes to any existing commitments.

Richard L. Anderson
Vice President, Duane Arnold Energy Center
FPL Energy Duane Arnold, LLC

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

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1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET NUMBER 05000 331	3. PAGE 1 OF 4
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4. TITLE
Outdoor Liquid Radwaste Storage Tank Radioactive Concentration Limit Exceeded

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
02	03	09	2009	002	0	03	05	09	FACILITY NAME	DOCUMENT NUMBER 05000
									FACILITY NAME	DOCUMENT NUMBER 05000

9. OPERATING MODE 4	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)										
	<input type="checkbox"/> 20.2201(b)	<input checked="" type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)							
10. POWER LEVEL 0%	<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 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 type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> VOLUNTARY LER								

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Bob 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	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

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)

Following a manual scram that occurred on February 1, 2009, water was directed from the reactor to the radwaste system in order to adjust reactor water level. The water was directed to the radwaste tanks via the Reactor Water Clean Up (RWCU) and Residual Heat Removal (RHR) systems. Some of the RWCU water went to the normal radwaste tanks (1T-070 and 1T-072) for processing, however, most of the RHR water was directed into the radwaste surge tank, 1T-088. At 1332, on February 2, 2009, Surveillance Test Procedure (STP) NS490002, Low Pressure Coolant Injection (LPCI) Inject Check Valve Full Flow Test, was started as previously planned. This test resulted in an additional source of reactor vessel water to 1T-088 from the RHR Shutdown Cooling System. The RHR Shutdown Cooling system is an unfiltered source of reactor water. At 0130 on February 3, 2009, a radwaste operator discovered elevated dose rates in the vicinity of 1T-088. A subsequent sample of 1T-088 determined that the tank contained approximately 88 Curies of total radioactivity. This exceeded the Technical Specification administrative limit and Operational Dose Assessment (ODAM) limit of 50 Curies. Therefore, this event is reportable per 10 CFR 20.2203(a)(3)(i).

**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 2009	SEQUENTIAL NUMBER 002	REV NO. 0	

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

I. Description of Event:

On February 1, 2009, while the plant was being shutdown in preparations for a scheduled refueling outage (RFO), a manual scram was inserted in anticipation of a loss of circulating water due to failed cooling tower riser pipe (reference LER 2009-001). On February 2, 2009, in order to control reactor water level, reactor water was sent to the radwaste processing tanks via the Reactor Water Cleanup (RWCU) and Residual Heat Removal (RHR) systems. The RWCU effluent was sent to the normal radwaste processing tanks 1T-070 and 1T-072. While quantities of the reactor water sent to radwaste via RHR went to 1T-070 and 1T-072, most went to the Radwaste Surge Tank, 1T-088.

At 1332 on February 2, 2009, operations commenced the Low Pressure Coolant Injection (LPCI) Inject Check Valve Full Flow Surveillance Test Procedure (STP), NS 490002. In previous performances of this STP, increased amounts of crud levels and higher dose readings have been discovered in areas of the plant through which the RHR discharge piping passes. During this RFO, the STP was being performed much earlier in the schedule than previous RFOs to minimize the effect on the RFO. Also for this RFO, the STP had been revised to run two RHR pumps for an additional ten hours with the RWCU system in service to minimize the amount of crud induced radioactive hot spots in the affected piping. Prior to the start of the STP, a pre-test briefing was conducted by management with representatives from engineering, operations, chemistry, and radiation protection. The radwaste operators were not included in this briefing, and therefore, were not aware that the STP was being performed.

During the initial performance of the STP, operators were attempting to maintain reactor water level utilizing the RWCU dump valve. On February 2, 2009 at 1413, after commencing STP NS490002, the 'B' RWCU filter demineralizers automatically shutdown because of high flow. The 'A' RWCU bed stayed in service, however, operators were unable to adequately control reactor water level utilizing the RWCU dump valve. Therefore, operators commenced sending reactor water to the radwaste system through the RHR Shutdown Cooling system. Water from the RHR Shutdown Cooling system is unfiltered water. At the time of this change, the radwaste operators were not aware of the fact that unfiltered reactor water was being sent to 1T-088. At 1550 on February 2, 2009, the operators secured sending RHR Shutdown Cooling water to 1T-088.

The Radwaste tanks, 1T-070 & 1T-072, are normally used to process water through the Radwaste system and 1T-088 is used to store any excess water until the radwaste operators have time to process it. This process of storing water in 1T-088 is normally done during power operation with no abnormal increases in radioactive concentrations. When the radwaste operators were later informed that the RHR Shutdown Cooling system water was unfiltered, the turnover to the next shift specified only that the dose rate meter on 1T-088 needed to be checked.

**LICENSEE EVENT REPORT (LER)
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1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET 05000 - 331	6. LER NUMBER			3. PAGE 3 OF 4
		YEAR 2009	SEQUENTIAL NUMBER 002	REV NO. 0	

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

At 0130 on February 3, 2009, a radwaste operator discovered the dose rate at 1T-088 to be 34 millirem/hr. A dose rate > 10 millirem/hr requires the radwaste operators to perform STP NS690102, Radwaste Surge Tank 1T-88 Sampling and Analysis. This STP directs plant chemists to obtain a sample of water from 1T-088 for gamma isotopic analysis. The sample analysis of 1T-088 found that the tank contained approximately 88 curies of total radioactivity.

Operational Dose Assessment Manual (ODAM) Limiting Condition for Operations (OLCO) 6.1.5, requires the quantity of radioactive material contained in unprotected, outdoor tanks to be limited to less than or equal to 50 Curies, excluding tritium and dissolved or entrained noble gases. The ODA M states that tanks included in this specification are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system. 1T-088 is located in the Low-Level Radwaste Processing and Storage Facility (LLRPSF). The LLRPSF is not designed for the operating basis earthquake in accordance with the guidance provided in Section 5.0 of Regulatory Guide 1.143. Accordingly, 1T-088 is considered an outdoor tank without surrounding liners or walls or area drain collection provisions and the conditions of ODA M OLCO 6.1.5 are applicable.

At 0555 on February 3, 2009, ODA M OLCO 6.1.5 Condition A: "Quantity of radioactive material in the tanks exceeding the limit," was entered. The actions associated with Condition A required suspension of all additions of radioactive material to 1T-088 and to reduce tank concentration limits to less than 50 Curies within 48 hours. At 1135 on February 4, 2009, after 1T-088 tank concentrations levels were reduced to less than 50 Curies, ODA M OLCO 6.1.5 Condition A was exited.

In addition to exceeding the ODA M limit for concentration, the condition of 1T-088 also exceeded the license limit of Technical Specification (TS) 5.5.8, Explosive Gas and Storage Tank Radioactivity Monitoring Program, Section 'b.' This TS limits the liquid radwaste storage tanks in the LLRPSF to less than 50 Curies.

II. Assessment of Safety Consequences:

There were no Radiological or Nuclear safety consequences from this event. This event did not result in any increased occupational dose to workers.

III. Cause of Event:

An Apparent Cause Evaluation (ACE) was conducted. The ACE determined that cause of the event was a lack of understanding of plant conditions during the period following the plant scram on the part of the radwaste operator. Specifically, the radwaste operator did not know that the LPCI Full Flow Test was in process, and therefore, sending unfiltered, highly contaminated reactor water to 1T-088. Additionally, one factor compounding this event was the fact that the radwaste operator was ultimately made aware that the water sent to 1T-088 was from RHR Shutdown Cooling but was not timely in acting on the knowledge.

**LICENSEE EVENT REPORT (LER)
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1. FACILITY NAME Duane Arnold Energy Center	2. DOCKET 05000 - 331	6. LER NUMBER			3. PAGE 4 OF 4
		YEAR 2009	SEQUENTIAL NUMBER 002	REV NO. 0	

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IV. Corrective Actions:

Immediate:

1. Entered ODAM OLCO 6.1.5 and confirmed all additions of radioactive water material to 1T-088 were suspended.
2. Completed actions to reduce 1T-088 concentrations to less than 50 Curies.

Long Term:

1. A revision to STP NS490002 will be made to include a step for operations to notify the radwaste operator prior to sending RHR Shutdown Cooling water to the radwaste system.
2. Revisions to radwaste procedures will be made to provide guidance regarding receiving and storing unfiltered reactor water and the impact on the 1T-088 50 Curie concentration limit.
3. As a result of this event, an information sharing will be developed and provided to radwaste operators describing this event.

V. Additional Information:

Previous Similar Occurrences:

A review of LERs over the previous 5 years revealed no similar occurrences

EIIS System and Component Codes:

N/A

Reporting Requirements:

This event is reportable under 10 CFR 20.2203(a)(3)(i).