NEXTera ENERGY
DUANE ARNOLD

December 20, 2017

NG-17-0106

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

Correction to the 2011 and 2016 Annual Radioactive Material Release Reports

An internal audit of radioactive shipments performed by NextEra Energy Duane Arnold, LLC has identified a 2011 dry active waste shipment that was not reported in the 2011 Annual Radioactive Material Release Report provided to the NRC via NG-12-0191 on April 27, 2012, ADAMS Accession No. ML121220362. Due to this omission, pages 13, 14, 15 and 18 of the 2011 report are in error. An amended copy of these pages is enclosed. Corrections are indicated with a revision bar.

In the recently transmitted 2016 Annual Radioactive Material Release Report, the above audit finding was discussed on page 15. However, a typographical error has been noted regarding waste activity content. (This content was incorrectly stated as E-02 Ci instead of E-03 Ci.) The waste activity content has also been updated from 3.43 to 3.46 millicuries. An amended copy of page 15 is enclosed, with the correction indicated with a revision bar. The original report was provided to the NRC via NG-17-0092 on April 28, 2017. (ADAMS Accession No. ML17118A244.)

This letter makes no new commitments nor changes to existing commitments.

Should you have any questions regarding this matter, please contact Michael Casey at (319) 851-7606.

Dean Curtland
Director, Site Operations
NextEra Energy Duane Arnold, LLC

IE48
NRR

Enclosures

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

Enclosure 1 to NG-17-0106

Duane Arnold Energy Center
Amended Pages 13, 14, 15 and 18 of the
2011 Annual Radioactive Material Release Report

4 pages follow

SUMMARY OF RADIOACTIVE SOLID WASTE

Summary of Radioactive Solid Waste for 2011

A total of nine solid radioactive waste shipments were made during 2011.

Five shipments of spent resin were made in 2011. These five shipments of spent resin in poly liners were shipped for direct burial at Energy Solutions, located in Clive, Utah at their Containerized Waste Facility (CWF). Four of these shipments contained resin from the condensate system. One of these shipments contained resin from the Reactor water Clean-up system. These shipments were all transported by highway.

Four shipments of Dry Active Waste (DAW) were shipped for processing and then to burial during the year 2011. All four shipments were sent to Energy Solutions Bear Creek processing facility for sorting and then shipped for burial at Energy Solutions Clive, Utah facility. The transportation for the waste was by highway.

During an internal audit of radioactive solid waste records in 2017, a single dry active waste shipment was not included in the 2011 Annual Radiological Material Release Report (Condition Report 02182217). The 2011 original summary indicated a total of eight solid radioactive waste shipments including three DAW shipments. Specifically, DAW shipment, 11-06, was missing and is comprised of:

Waste weight:	27,800 lbs
Waste activity:	3.46 E-03 Ci
Waste volume:	1,000 ft3
Waste density:	27.8 lbs/ft3
External volume:	1,360 ft3
Waste type:	DAW

Shipments in 2011

Listed below are tables summarizing the Duane Arnold Energy Center's generation of Radioactive Solid Waste for the period of January 1, 2011 through December 31, 2011.

Shipments Made To Burial Facilities In 2011:

WASTE TYPE	NO. SHIPMENTS	VOLUME (ft^3)	ACTIVITY (mCi)
Resin	5	8.13E+02	3.23E+05
DESTINATION	Energy Solutions, Containerized Waste Facility and Bulk Waste Facility Clive, Utah		

Shipments Made To Processing Facilities:

WASTE TYPE	NO. SHIPMENTS	VOLUME (ft^3)	ACTIVITY (mCi)
DAW	4	7.44E+03	2.69E+02
DESTINATION	Energy Solutions, Containerized Waste Facility and Bulk Waste Facility Clive, Utah		

Total Solid Waste Disposition:

WASTE	VOLUME (ft^3)	ACTIVITY (mCi)
Shipped	8.26E+03	3.24E+05
Buried	8.26E+03	3.24E+05

SOLIDIFICATION AGENT: None
MODE OF TRANSPORTATION: Exclusive-Use Vehicle (Trucks).

Waste Classification Per 10 CFR 61	NUMBER OF SHIPMENTS IN 2011
A-Unstable	9
A-Stable	0
B	0
C	0

Site Historical Comparison

Year	Volume Buried(ft^3)	Activity (Ci)
2004	1.45E+03	586
2005	1.51E+04	57
2006	3.18E+03	11400
2007	1.40E+04	110
2008	5.42E+03	134
2009	1.16E+04	58
2010	1.14E+04	23
2011	**8.26E+03**	324

Summary Tables of Radioactive Solid Waste
Dry Active Waste

(January 1, 2011 - December 31, 2011)

MAJOR NUCLIDE COMPOSITION

Table 2 Dry Active Waste

Principle Nuclide	1st QTR (mCi)	2nd QTR (mCi)	3rd QTR (mCi)	4th QTR (mCi)	Total (mCi)	Percent Abundance
H-3	4.69E-01	8.76E-01	3.43E-01	0.00E+00	1.69E+00	0.629%
C-14	2.81E-02	5.09E-02	1.99E-02	0.00E+00	9.89E-02	0.037%
Cr-51	2.55E-01	4.77E-01	1.87E-01	0.00E+00	9.19E-01	0.342%
Mn-54	6.98E+00	1.27E+01	4.99E+00	0.00E+00	2.47E+01	9.189%
Fe-55	3.25E+01	5.69E+01	2.23E+01	0.00E+00	1.12E+02	41.596%
Co-57	6.77E-03	1.25E-02	4.89E-03	0.00E+00	2.42E-02	0.009%
Co-58	5.72E-01	1.04E+00	4.08E-01	0.00E+00	2.02E+00	0.752%
Ni-59	1.86E-02	0.00E+00	0.00E+00	0.00E+00	1.86E-02	0.007%
Fe-59	3.14E-01	5.33E-01	2.09E-01	0.00E+00	1.06E+00	0.393%
Co-60	3.25E+01	5.87E+01	2.30E+01	0.00E+00	1.14E+02	42.542%
Ni-63	1.39E+00	2.51E+00	9.84E-01	0.00E+00	4.88E+00	1.819%
Zn-65	1.21E+00	2.20E+00	8.62E-01	0.00E+00	4.28E+00	1.593%
Sr-89	1.51E-02	2.68E-02	1.05E-02	0.00E+00	5.24E-02	0.020%
Sr-90	6.16E-03	1.14E-02	4.48E-03	0.00E+00	2.20E-02	0.008%
Zr-95	8.08E-02	8.73E-02	3.42E-02	0.00E+00	2.02E-01	0.075%
Nb-95	5.41E-02	1.00E-01	3.91E-02	0.00E+00	1.93E-01	0.072%
Tc-99	2.40E-02	4.42E-02	1.73E-02	0.00E+00	8.55E-02	0.032%
Ag-110m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000%
Sn-113	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000%
Sb-124	2.51E-02	4.70E-02	1.84E-02	0.00E+00	9.05E-02	0.034%
Sb-125	2.19E-01	4.01E-01	1.57E-01	0.00E+00	7.77E-01	0.289%
I-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000%
I-129	1.03E-02	1.88E-02	7.35E-03	0.00E+00	3.64E-02	0.014%
Cs-137	3.34E-01	6.23E-01	2.44E-01	0.00E+00	1.20E+00	0.447%
Ce-144	7.75E-02	1.42E-01	5.56E-02	0.00E+00	2.75E-01	0.102%
Hf-181	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000%
Am-241	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000%
Totals	7.71E+01	1.38E+02	5.39E+01	0.00E+00	2.69E+02	100.00%

Note: H-3, C-14, Tc-99 and I-129 are required to be manifested per 10 CFR 20, Appendix G.

Tc-99 and I-129 represent Minimum Detectable Activity (MDA) values
These two nuclides are calculated from uCi/cc on manifest by the material volume

No Dry Active Waste shipments made in the 4th Quarter of 2011

Summary of Radioactive Solid Waste – Annual Summary

(January 1, 2011- December 31, 2011)

MAJOR NUCLIDE COMPOSITION

Table 3 Radwaste Annual Summary

Principle Nuclide	1st QTR (mCi)	2nd QTR (mCi)	3rd QTR (mCi)	4th QTR (mCi)	Total (mCi)	Percent Abundance
H-3	3.52E+01	2.79E+02	1.48E+01	3.03E+01	3.59E+02	0.111%
C-14	2.56E+01	2.08E+02	2.94E+00	2.51E+01	2.61E+02	0.081%
Cr-51	2.63E+02	5.68E+02	1.87E-01	4.55E+01	8.77E+02	0.275%
Mn-54	6.74E+02	7.51E+03	2.70E+04	9.90E+02	3.62E+04	11.205%
Fe-55	3.35E+03	2.68E+04	1.73E+05	3.24E+03	2.06E+05	63.924%
Co-57	5.49E-01	4.87E+01	4.89E-03	5.29E+01	1.02E+02	0.032%
Co-58	1.50E+02	1.08E+03	3.52E+03	6.54E+01	4.82E+03	1.492%
Ni-59	3.94E+00	3.17E+01	0.00E+00	3.83E+00	3.94E+01	0.012%
Fe-59	5.69E+01	2.25E+02	2.09E-01	5.02E+01	3.32E+02	0.104%
Co-60	9.76E+02	7.67E+03	5.25E+04	9.21E+02	6.21E+04	19.221%
Ni-63	1.23E+02	9.88E+02	7.10E+02	1.19E+02	1.94E+03	0.601%
Zn-65	1.31E+02	7.66E+02	7.51E+03	7.72E+01	8.49E+03	2.627%
Sr-89	1.17E+01	9.16E+01	1.05E-02	1.01E+01	1.13E+02	0.035%
Sr-90	1.78E+00	1.43E+01	1.07E+01	1.55E+00	2.83E+01	0.009%
Zr-95	6.55E+00	5.10E+01	3.42E-02	5.58E+00	6.32E+01	0.020%
Nb-95	2.08E+00	5.92E+01	3.91E-02	1.54E+01	7.68E+01	0.024%
Tc-99	5.60E+00	1.18E+01	3.43E+00	6.07E+00	2.69E+01	0.008%
Ag-110m	3.23E+00	2.59E+01	0.00E+00	3.15E+00	3.23E+01	0.010%
Sn-113	9.55E-01	7.63E+00	0.00E+00	9.28E-01	9.51E+00	0.003%
Sb-124	3.80E+00	3.00E+01	1.84E-02	3.64E+00	3.74E+01	0.012%
Sb-125	2.19E-01	7.44E-01	1.57E-01	0.00E+00	1.12E+00	0.001%
I-125	6.40E-01	4.00E+00	0.00E+00	6.18E-01	5.26E+00	0.002%
I-129	1.73E+00	3.63E+00	1.50E+00	1.87E+00	8.73E+00	0.003%
Cs-137	4.95E+01	3.95E+02	4.23E+01	4.29E+01	5.30E+02	0.164%
Ce-144	7.31E+00	5.79E+01	5.56E-02	6.29E+00	7.15E+01	0.022%
Hf-181	0.00E+00	5.80E+00	0.00E+00	0.00E+00	5.80E+00	0.002%
Am-241	1.45E-01	1.16E+00	0.00E+00	1.26E-01	1.43E+00	0.000%
Totals	5.89E+03	4.69E+04	2.64E+05	5.72E+03	3.24E+05	100.00%

Note: H-3, C-14, Tc-99 and I-129 are required to be manifested per 10 CFR 20, Appendix G.

H-3, C-14, Tc-99 and I-129 include Minimum Detectable Activity (MDA) values

These three nuclides are calculated from uCi/cc on manifest by the material volume

No Dry Active Waste shipments made in 4th Quarter of 2011

Enclosure 2 to NG-17-0106

Duane Arnold Energy Center
Amended Page 15 of the
2016 Annual Radioactive Material Release Report

1 page follows

RADIOACTIVE SOLID WASTE

A total of twenty-one solid radioactive waste shipments were made during 2016.

Six shipments of spent resin were made in 2016. These shipments of spent resin in poly liners were shipped for direct burial at Energy Solutions, located in Clive, Utah at their Containerized Waste Facility (CWF). All of these shipments contained resin from the condensate system and all were transported by highway.

Fifteen shipments of Dry Active Waste (DAW) were shipped for processing and then to burial during the year 2016. All 15 shipments were sent to Energy Solutions Bear Creek processing facility for sorting and subsequently shipped for burial at Energy Solutions Clive, Utah facility. The transportation for this waste was by highway.

There were no shipments of liquid waste in 2016.

During an internal audit of radioactive solid waste records, a single dry active waste shipment was not included in the 2011 Annual Radiological Material Release Report (Condition Report 02182217). Specifically:

Waste weight:	27,800 lbs
Waste activity:	3.46E-03 Ci
Waste volume:	1,000 ft^3
Waste density:	27.8 lbs/ft^3
External volume:	1,360 ft^3
Waste type:	DAW