



FEB 26 2018

L-2018-048  
10 CFR 50.36  
10 CFR 50.36a

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
2017 Annual Radioactive Effluent Release Report

Pursuant to 10 CFR 50.36a(a)(2) and Technical Specification (TS) 6.9.1.7, enclosed is the 2017 Annual Radioactive Effluent Release Report for St. Lucie Units 1 and 2. The report provides information for the 12-month period beginning January 1, 2017 and ending December 31, 2017.

Enclosure 1 includes the Combined Annual Radioactive Effluent Release Report.  
Enclosure 2 is a copy of C-200, *Offsite Dose Calculation Manual (ODCM), Revision 50*.  
Enclosure 3 is a copy of the change pages from Revisions 48 and 49 of the ODCM.

Please contact me at 772-467-7036 with any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael J. Snyder'.

Michael J. Snyder  
Licensing Manager  
St. Lucie Plant

MJS/spt

Enclosures

IE 48  
NRR

ENCLOSURE 1

COMBINED ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
(10 PAGES)

**FLORIDA POWER & LIGHT COMPANY  
ST. LUCIE UNITS 1 AND 2  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
JANUARY 1, 2017 THROUGH DECEMBER 31, 2017**

**1.0 PROGRAM DESCRIPTION**

**2.0 SUPPLEMENTAL INFORMATION**

- 2.1 Abnormal Releases or Abnormal Discharges
- 2.2 Non-Routine Planned Discharges
- 2.3 Radioactive Waste Treatment System Changes
- 2.4 Annual Land Use Census Changes
- 2.5 Effluent Monitoring System Inoperability
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- 3.2 Solid Waste Storage and Shipments
- 3.3 Dose Assessments
- 3.4 Visitor Dose

## **1.0 PROGRAM DESCRIPTION**

### **Regulatory Limits**

The Offsite Dose Calculation Manual (ODCM) Radiological Effluent Control limits applicable to the release of radioactive material in liquid and gaseous effluents are described in the following sections.

### **Fission and Activation Gases (Noble Gases)**

The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to less than or equal to 500 mrem/yr to the whole body and less than or equal to 3000 mrem/yr to the skin.

The air dose due to noble gases released in gaseous effluents, from each unit, to areas at and beyond the site boundary shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and
- b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

### **Iodine-131, Iodine-133, Tritium, Carbon-14, and Radioactive Material in Particulate Form**

The dose rate due to iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives greater than 8 days, released in gaseous effluents from the site to areas at and beyond the site boundary, shall be limited to less than or equal to 1500 mrem/yr to any organ.

The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, carbon-14, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents released, from each unit, to areas at and beyond the site boundary, shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ, and
- b. During any calendar year: Less than or equal to 15 mrem to any organ.

### **Liquid Effluents**

The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to  $2.0E-4$   $\mu$ Ci/ml total activity.

The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each unit, to unrestricted areas shall be limited:

- a. During any calendar quarter to less than or equal to 1.5 mRem to the whole body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mRem to the whole body and to less than or equal to 10 mrem to any organ.

### **Total Dose**

The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the whole body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

### **Effluent Concentration Limits**

#### **Gaseous Effluents**

For gaseous effluents, effluent concentration limits (ECL) values are not directly used in release rate calculations since the applicable limits are expressed in terms of dose rate at the site boundary.

#### **Liquid Effluents**

The values specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 are used as the ECL for liquid radioactive effluents released to unrestricted areas. A value of  $2.0E-04$   $\mu\text{Ci/ml}$  is used as the ECL for dissolved and entrained noble gases in liquid effluents.

### **Measurements and Approximations of Total Radioactivity**

Measurements of total radioactivity in liquid and gaseous radioactive effluents were accomplished in accordance with the sampling and analysis requirements of Tables 4.11-1 and 4.11-2, respectively, of the St. Lucie ODCM. Estimates of errors are in accordance with Methodology Section 4.0.4, of the ODCM.

The estimate of errors associated with values reported are as follows:

<u>Error Topic</u>	<u>LIQUID</u>		<u>GASEOUS</u>	
	<u>Avg. %</u>	<u>Max. %</u>	<u>Avg. %</u>	<u>Max. %</u>
Release Point Mixing	2	5	NA	NA
Sampling	1	5	2	5
Sample Preparation	1	5	1	5
Sample Analysis	3	10	3	10
Release Volume	<u>2</u>	<u>5</u>	<u>4</u>	<u>15</u>
Total %	9	30	10	35

(above values are examples only)

The predictability of error for radioactive releases can only be applied to nuclides that are predominant in sample spectrums. Nuclides that are near-background relative to the predominant nuclides in a given sample could easily have errors greater than the above listed maximums.

### **Liquid Radioactive Effluents**

Each batch release was sampled and analyzed for gamma emitting radionuclides using gamma spectroscopy, prior to release. Composite samples were analyzed monthly for tritium and gross alpha radioactivity in the onsite laboratory using liquid scintillation and air ion chamber counting techniques, respectively. Composite samples were analyzed quarterly for Sr-89, Sr-90, Fe-55, Ni-63 and C-14 by a contract laboratory. The results of the composite analyses from the previous month or quarter were used to estimate the quantities of these radionuclides in liquid effluents during the current month or quarter.

The total radioactivity in liquid effluent releases was determined from the measured and estimated concentrations of each radionuclide present and the total volume of the effluent released during periods of discharge.

### **Gaseous Radioactive Effluents**

Each gaseous batch, was sampled and analyzed for radioactivity prior to release. For releases from gas-decay tanks, noble gas grab samples were analyzed for gamma emitting radionuclides using gamma spectroscopy. For releases from the reactor containment buildings, samples were taken of noble gas and tritium grab samples and analyzed for gamma emitting radionuclides prior to each release. The results of the analyses and the total volume of effluent released were used to determine the total amount of radioactivity released in the batch mode.

For continuous effluent release pathways, noble gas and tritium grab samples were collected and analyzed weekly for gamma emitting radionuclides by gamma spectroscopy and liquid scintillation counting techniques, respectively. Continuous release pathways were continuously sampled using radioiodine adsorbers and particulate filters. The radioiodine adsorbers and particulate filters were analyzed weekly for gamma emitting radionuclides using gamma spectroscopy. Results of the noble gas and tritium grab samples, radioiodine adsorber and particulate filter analyses from the current week and the average effluent flow rate for the previous week were used to determine the total amount of radioactivity released in the continuous mode. The particulate filters were analyzed weekly for gross alpha activity in the onsite laboratory using the air ion chamber counting technique. Quarterly composites of particulate filters were analyzed for Sr-89 and Sr-90 by a contract laboratory.

### **Meteorological Monitoring Program**

In accordance with ODCM Administrative Control 3.11.2.6.b., a summary of hourly meteorological data, collected during 2017, is retained onsite. This data is available for review by the NRC upon request. During 2017, the goal of >90% joint data recovery was met. Actual meteorological data collected during the year was used for the offsite dose calculations in this report.

### **Carbon-14 Dose Estimation**

The estimate of Carbon-14 (C-14) released from the St. Lucie Nuclear Plant was derived from the EPRI document, "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents", Report 1021106, issued December 2010.

The site specific source term values used in the St. Lucie calculations were taken from the PWR Section, Page 4-28 of the report, and employed the proxy generation rate values for a Combustion Engineering reactor. The actual 2017 operating data for the units was employed for the calculations to derive the total curies released for each unit.

The total amount of C-14 released in 2017 for Unit 1 was 11.24 Ci, and the total amount of C-14 released in 2017 for Unit 2 was 10.32 Ci.

The highest calculated dose exposure pathway from C-14 is "Bone Dose" to a "Child" from consumption of garden produce. A "Child" consuming vegetables and produce from the garden located at 2.0 miles in the West direction from the plant would have received a total combined "Bone Dose", from C-14, of  $1.63e-1$  mrem/yr.

Assessment of radiation dose from radioactive effluents to members of the public due to their activities inside the site boundary assumes the visitor to be a lifeguard at Walton Rocks Beach Recreation Area located 1 mile southeast of the site. Dose to the visitor on site for calendar year 2017 is found to be  $2.80E-03$  mrem/yr, Total Body dose. See Table 3.4, Dose Assessments, for more detail.

This is a fraction of the 1 mrem annual whole body dose received by the average US citizen from natural occurring Carbon-14, primarily generated through cosmogenesis in the terrestrial biosphere. (Reference National Council of Radiation Protection Report 45, Natural Background Radiation in the United States.)

All C-14 dose calculations are based on Regulatory Guide 1.109 values.

## 2.0 SUPPLEMENTAL INFORMATION

### 2.1 Abnormal Releases or Abnormal Discharges

#### 2A GDT Unplanned Release - (AR# 02193168 / WR#94157276)

- One abnormal (unplanned) gas decay tank discharge from the site occurred on March 22, 2017. Operations entered 2-AOP-06.04, Uncontrolled Release of Radioactive Gas, due to loss of 31 psig in a 12 hour period from the 2A Gas Decay Tank (GDT).

The 2A GDT Unplanned Release was accounted for using a Abnormal Gas Decay Release Permit, G-17-119-B. AR #02193168 was generated to document the unplanned GDT release to the auxiliary building which was monitored by an operable plant vent radiation monitor on the plant vent stack. No additional leaks have been identified since its return to service.

Release Estimates Are As Follows:

Nuclide	uCi/cc concentration	uCi released
Kr-85	2.940E-04	3.890E+03
Xe-131m	2.240E-05	2.964E+02
Xe-133	2.820E-04	3.731E+03

Maximum Infant Dose for NW Site Boundary:

Total Body (mRem)	Skin (mRem)	Gamma Air (mRad)	Beta Air (mRad)
6.021E-08	4.094E-07	7.25E-08	6.00E-07

### 2.2 Non-Routine Planned Discharges

No non-routine planned discharges were made during the report period.

### 2.3 Radioactive Waste Treatment System Changes

No changes were made to the radioactive waste treatment system during the report period.

### 2.4 Annual Land Use Census Changes

No changes were made to the Land Use Census during the report period as compared to the previous year's report.



## 2.5 Effluent Monitoring System Inoperability

One effluent monitor was out of service for greater than 30 days during the report period. On January 18<sup>th</sup>, 2018 I&C Maintenance was performing the ECCS radiation monitors monthly functional surveillance in accordance with 1-SMI-26.03. At this time it was identified that the 'B' ECCS radiation monitors alarm leads were lifted (i.e. de-termed). The discrepancy was corrected and RSC-26-3 returned to service on January 19<sup>th</sup>, 2018. During the Past Operability/Functionality Review it was determined that the leads were lifted under WO: 40400949-16, to support installation of the A ECCS radiation monitor. With the B ECCS alarm leads lifted the radiation monitor should have been declared inoperable and St. Lucie could have either restored the radiation monitor within 72 hours or initiated an alternate method of monitoring. St Lucie Unit 1 did not perform the applicable action statement as required by the Offsite Dose Calculation Manual. With the Alarm leads lifted the B ECCS radiation monitor would have performed its required function locally at the ECCS monitor. This means the radiation monitor would have monitored radiation levels using the normal and accident monitors depending on the radiological conditions. In addition, the radiation monitors local display would have indicated and alarmed to alert plant personnel of abnormal radiation conditions or a monitor failure. If a failure of the radiation monitor had occurred it would have not annunciated in the control room, thus not meeting the requirement of ADM-11.16 guidance. During the timeframe that this channel of alarm capability was defeated, the remote monitoring displays of actual values to the control room and other monitoring areas remained functional. Upon review, no effluent releases were performed through this effluent pathway. All gaseous releases during the time frame of December 15<sup>th</sup>, 2017 and January 18<sup>th</sup>, 2018, were planned and monitored via approved release pathways.

## 2.6 Offsite Dose Calculation Manual Changes

Three revision changes were made to the St. Lucie Site ODCM during the report period.

- **Revision 50** - Incorporated PCR 2223046 to remove affected process effluent radiation monitors from the Technical Specifications and incorporate them into the Offsite Dose Calculation Manual. (Author: T. Bertolini)
- **Revision 49** - Incorporated PCR 2137189 per EC 278372 to update values in Methodology Section. (Author: T. Bertolini)
- **Revision 48** - Incorporated PCR 2184721 to add note to cover page ensuring that changes to the ODCM are reviewed by EP. (Author: N. Davidson)

### **2.7 Process Control Program Changes**

There were no changes to the Process Control Program during the report period.

### **2.8 Corrections to Previous Reports**

There were no corrections to previous reports during the report period.

### **2.9 Other**

Five batch releases were made from the South Settling Basin to the Intake Canal during the report period to lower the water level from periods of higher than normal rainfall. All releases were analyzed according to the ODCM and site procedural requirements and were found to have no detectable gamma, tritium, alpha or hard to detect isotopes. The releases are listed below:

<u>Release Start Date</u>	<u>Release Volume</u>
7/30/17	447,662 gallons
9/6/17	19,908,299 gallons
9/13/17	904,523 gallons
10/4/17	4,337,515 gallons
10/28/17	3,790,000 gallons

### **2.10 Groundwater Protection Program**

- No limits were exceeded for the analyzed St. Lucie Nuclear Site Groundwater Protection Program for the report period.
- St. Lucie Nuclear Site Groundwater Protection Program results for the report period are contained in the following tables.

**2017 St. Lucie Nuclear Plant Groundwater Protection Program Tritium  
Results**

Sentinel Well ID	H3 Jan 2017	H3 Feb 2017	H3 Mar 2017	H3 Apr 2017	H3 May 2017	H3 June 2017	H3 July 2017	H3 Aug 2017	H3 Sept 2017	H3 OCT 2017	H3 NOV 2017	H3 Dec 2017
Diesel - Unit 1 & 2	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
MW-3		379			504				403		528	
MW-4		<219			353				<256		281	
MW-5		<210			<202				<259		<218	
MW-6		987			1050				1190		1010	
MW-7		<199			<263				<260		<211	
MW-15		373			373				386		357	
MW-16	<221	<198			347				<257		245	
MW-17	2490	3420	2580	2920	2540	2240	2530	3940	3890	3550	3370	3080
MW-18D	2220	3500		2800	2990	3340	3920	3740	2370	1190	2310	2190
MW-19		<219			<259				<263		<217	
MW-22D		<219			<270				<261		<216	
MW-26		<221			<201				<265		<215	
RW-2		272			359				294		<215	
RW-4		<201			316				<258		<217	
RW-5		<219			<206				<261		<210	
MW-30	870	1150	1350	1040	1230	1010	796	651	962	455	345	216
MW-31		308			371				405		294	
MW-32		524			472				452		543	
MW-33		854			895				468		584	

Monitor Well ID	H3 Jan 2017	H3 Feb 2017	H3 Mar 2017	H3 Apr 2017	H3 May 2017	H3 June 2017	H3 July 2017	H3 Aug 2017	H3 Sept 2017	H3 OCT 2017	H3 NOV 2017	H3 Dec 2017
TLO Wells	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
Unit 1-MW001		324			344				382		<229	
Unit 1-MW002		<221			<225				347		<230	
Unit 1-MW003		224			316				<241		<233	
Unit 1-MW004		<230			<215				<252		<212	
Unit 1-MW005	1730	1060	2270	1670	2540	1690	1270	982	1450	597	339	<231
Unit 2-MW001		1120			1170				<241		<229	
Unit 2-MW002	2340	2810	2410	1330	2220	2670	1790	2900	379	1720	545	413
Unit 2-MW003		710			751				1230		1270	
Unit 2-MW004		341			584				332		417	

Monitor Well ID	H3 Jan 2017	H3 Feb 2017	H3 Mar 2017	H3 Apr 2017	H3 May 2017	H3 June 2017	H3 July 2017	H3 Aug 2017	H3 Sept 2017	H3 OCT 2017	H3 NOV 2017	H3 Dec 2017
Mixed Plume	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
(S)-MW-1		<235			<221				<253		<232	
(S)-MW-4		314			423				<253		291	
(S)-MW-6		<221			239				<239		<220	
(S)-MW-7A		<238			<215				<246		<220	
(S)-MW-11		303			403				257		<228	
(S)-MW-15D		<234			<223				<248		<231	
(S)-MW-16		<225			<222				<242		<221	
(S)-MW-16i		<237			<220				<243		<234	
(S)-MW-17		264			375				<248		<226	
(S)-MW-18		<236			<223				<249		<230	
(S)-MW-19		<228			235				<253		<234	

Monitor Well ID	H3 Jan 2017	H3 Feb 2017	H3 Mar 2017	H3 Apr 2017	H3 May 2017	H3 June 2017	H3 July 2017	H3 Aug 2017	H3 Sept 2017	H3 OCT 2017	H3 NOV 2017	H3 Dec 2017
Neutralization Basin	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
PSLED-2		<209										
NB-MW-1		<208										
NB-MW-2		<205										

### 3.0 TABLES

#### 3.1 Gaseous Effluents and Liquid Effluents

#### 3.2 Solid Waste Storage and Shipments

#### 3.3 Dose Assessments

#### 3.4 Visitor Dose

TABLE 3.1

GASEOUS EFFLUENTS AND LIQUID EFFLUENTS  
(23 PAGES)

**Reg. Guide 1.21, Table 5A and 5B - Liquid and Gas Batch Release Summary**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>A. Liquid Batch Release Totals</b>	<b>Units</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Year Totals</b>
1. Number of Batch Releases		28	6	12	16	62
2. Total duration of batch releases	min	1.87E+04	4.08E+03	1.92E+04	1.83E+04	6.03E+04
3. Maximum batch release duration	min	9.31E+02	7.94E+02	5.76E+03	7.20E+03	7.20E+03
4. Average batch release duration	min	6.67E+02	6.81E+02	1.60E+03	1.15E+03	9.72E+02
5. Minimum batch release duration	min	2.47E+02	5.80E+02	6.62E+02	3.55E+02	2.47E+02
<b>B. Gas Batch Release Totals</b>	<b>Units</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Year Totals</b>
1. Number of Batch Releases		66	88	50	73	277
2. Total duration of batch releases	min	6.48E+04	3.80E+04	1.29E+04	2.21E+04	1.38E+05
3. Maximum batch release duration	min	1.99E+04	1.85E+03	5.30E+02	7.20E+02	1.99E+04
4. Average batch release duration	min	9.82E+02	4.31E+02	2.58E+02	3.03E+02	4.98E+02
5. Minimum batch release duration	min	4.50E+01	2.00E+01	3.80E+01	1.20E+01	1.20E+01

**Reg. Guide 1.21, Table 6A and 6B - Liquid and Gas Abnormal Release Summary**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>A. Liquid Abnormal Release Totals</b>	<b>Units</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Year Totals</b>
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Cl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>B. Gas Abnormal Release Totals</b>	<b>Units</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Year Totals</b>
1. Number of Abnormal Releases		1	0	0	0	1
2. Total Activity of abnormal releases	Cl	7.92E-03	0.00E+00	0.00E+00	0.00E+00	7.92E-03

**Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Total Release</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>	<b>Uncertainty</b>
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	4.01E+01	1.16E+00	5.68E-01	3.26E+00	4.51E+01	
2. Average Release Rate for Period	uCi/s	5.16E+00	1.47E-01	7.14E-02	4.10E-01	1.43E+00	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	9.34E-04	2.22E-07	0.00E+00	0.00E+00	9.35E-04	
2. Average Release Rate for Period	uCi/s	1.20E-04	2.82E-08	0.00E+00	0.00E+00	2.96E-05	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	2.43E-06	1.18E-06	0.00E+00	9.44E-06	1.30E-05	
2. Average Release Rate for Period	uCi/s	3.12E-07	1.50E-07	0.00E+00	1.19E-06	4.14E-07	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	4.93E+00	1.97E+00	2.81E+00	2.51E+00	1.22E+01	
2. Average Release Rate for Period	uCi/s	6.34E-01	2.50E-01	3.54E-01	3.16E-01	3.88E-01	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	2.39E-08	4.62E-08	8.88E-09	0.00E+00	7.91E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	4.36E+00	5.74E+00	5.70E+00	5.70E+00	2.15E+01	
2. Average Release Rate for Period	uCi/s	5.60E-01	7.30E-01	7.18E-01	7.17E-01	6.82E-01	
3. Percent of Limit	%						



Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode

Unit: Site

Starting: 1-Jan-2017 Ending: 31-Dec-2017

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	2.80E+00	0.00E+00	0.00E+00	0.00E+00	2.80E+00
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	1.45E+00	1.45E+00
Xe-133	Ci	2.05E+01	0.00E+00	0.00E+00	0.00E+00	2.05E+01
<b>Total For Period</b>	<b>Ci</b>	<b>2.33E+01</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>1.45E+00</b>	<b>2.47E+01</b>
<b>B. Iodines and Halogens</b>						
I-131	Ci	8.50E-04	2.22E-07	0.00E+00	0.00E+00	8.51E-04
I-133	Ci	8.35E-05	0.00E+00	0.00E+00	0.00E+00	8.35E-05
<b>Total For Period</b>	<b>Ci</b>	<b>9.34E-04</b>	<b>2.22E-07</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>9.34E-04</b>
<b>C. Particulates</b>						
Co-60	Ci	2.28E-06	0.00E+00	0.00E+00	9.44E-06	1.17E-05
Cs-137	Ci	0.00E+00	1.18E-06	0.00E+00	0.00E+00	1.18E-06
<b>Total For Period</b>	<b>Ci</b>	<b>2.28E-06</b>	<b>1.18E-06</b>	<b>0.00E+00</b>	<b>9.44E-06</b>	<b>1.29E-05</b>
<b>D. Tritium</b>						
H-3	Ci	2.93E+00	0.00E+00	1.48E+00	0.00E+00	4.42E+00
<b>E. Gross Alpha</b>						
G-Alpha	Ci	2.39E-08	4.62E-08	8.88E-09	0.00E+00	7.91E-08
<b>F. Carbon-14</b>						
C-14	Ci	4.36E+00	5.74E+00	5.70E+00	5.70E+00	2.15E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	2.52E+00	7.72E-01	3.77E-01	1.53E+00	5.20E+00
Kr-85m	Ci	5.42E-04	2.96E-04	2.84E-05	0.00E+00	8.67E-04
Kr-85	Ci	3.40E-01	3.64E-03	2.79E-02	0.00E+00	3.71E-01
Kr-87	Ci	1.03E-04	2.25E-04	0.00E+00	0.00E+00	3.28E-04
Kr-88	Ci	0.00E+00	3.77E-04	0.00E+00	6.88E-05	4.46E-04
Xe-127	Ci	0.00E+00	8.33E-05	0.00E+00	4.60E-04	5.43E-04
Xe-131m	Ci	1.58E-02	0.00E+00	1.90E-05	5.31E-05	1.59E-02
Xe-135	Ci	2.84E-01	2.43E-02	7.82E-03	2.04E-02	3.36E-01
Xe-133m	Ci	3.23E-03	0.00E+00	0.00E+00	2.82E-04	3.51E-03
Xe-137	Ci	2.22E-03	0.00E+00	9.18E-03	0.00E+00	1.14E-02
Xe-133	Ci	1.37E+01	3.58E-01	1.46E-01	2.65E-01	1.44E+01
<b>Total For Period</b>	<b>Ci</b>	<b>1.68E+01</b>	<b>1.16E+00</b>	<b>5.68E-01</b>	<b>1.81E+00</b>	<b>2.04E+01</b>
<b>B. Iodines and Halogens</b>						
I-131	Ci	3.93E-07	0.00E+00	0.00E+00	0.00E+00	3.93E-07
I-133	Ci	2.63E-07	0.00E+00	0.00E+00	0.00E+00	2.63E-07
<b>Total For Period</b>	<b>Ci</b>	<b>6.56E-07</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>6.56E-07</b>
<b>C. Particulates</b>						
Co-60	Ci	1.53E-07	0.00E+00	0.00E+00	0.00E+00	1.53E-07
<b>D. Tritium</b>						
H-3	Ci	2.00E+00	1.97E+00	1.33E+00	2.51E+00	7.81E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg, Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>E. Gross Alpha</b>						
No Nuclides Found	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>F. Carbon-14</b>						
No Nuclides Found	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Total Release</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>	<b>Uncertainty</b>
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	3.02E+00	9.15E-01	2.79E-01	4.09E-01	4.62E+00	
2. Average Release Rate for Period	uCi/s	3.88E-01	1.16E-01	3.51E-02	5.14E-02	1.46E-01	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	7.40E-06	0.00E+00	0.00E+00	0.00E+00	7.40E-06	
2. Average Release Rate for Period	uCi/s	9.52E-07	0.00E+00	0.00E+00	0.00E+00	2.35E-07	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	2.28E-06	0.00E+00	0.00E+00	9.44E-06	1.17E-05	
2. Average Release Rate for Period	uCi/s	2.93E-07	0.00E+00	0.00E+00	1.19E-06	3.71E-07	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	7.22E-01	1.82E+00	2.43E+00	7.00E-01	5.67E+00	
2. Average Release Rate for Period	uCi/s	9.28E-02	2.31E-01	3.06E-01	8.81E-02	1.80E-01	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	1.56E-08	3.89E-08	4.78E-09	0.00E+00	5.93E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	2.60E+00	2.86E+00	2.82E+00	2.90E+00	1.12E+01	
2. Average Release Rate for Period	uCi/s	3.34E-01	3.63E-01	3.55E-01	3.65E-01	3.54E-01	
3. Percent of Limit	%						

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Continuous Mode				Annual
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	
<b>A. Fission and Activation Gases</b>						
Xe-133	Ci	4.74E-01	0.00E+00	0.00E+00	0.00E+00	4.74E-01
<b>B. Iodines and Halogens</b>						
I-131	Ci	7.40E-06	0.00E+00	0.00E+00	0.00E+00	7.40E-06
<b>C. Particulates</b>						
Co-60	Ci	2.28E-06	0.00E+00	0.00E+00	9.44E-06	1.17E-05
<b>D. Tritium</b>						
H-3	Ci	0.00E+00	0.00E+00	1.48E+00	0.00E+00	1.48E+00
<b>E. Gross Alpha</b>						
G-Alpha	Ci	1.56E-08	3.89E-08	4.78E-09	0.00E+00	5.93E-08
<b>F. Carbon-14</b>						
C-14	Ci	2.60E+00	2.86E+00	2.82E+00	2.90E+00	1.12E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Nuclides Released</b>	<b>Units</b>	<b>Batch Mode</b>				
		<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	1.93E-01	5.68E-01	1.70E-01	2.72E-01	1.20E+00
Kr-85m	Ci	5.42E-04	2.63E-04	2.84E-05	0.00E+00	8.34E-04
Kr-87	Ci	1.03E-04	2.25E-04	0.00E+00	0.00E+00	3.28E-04
Kr-88	Ci	0.00E+00	3.77E-04	0.00E+00	6.88E-05	4.46E-04
Xe-133m	Ci	3.22E-03	0.00E+00	0.00E+00	2.82E-04	3.50E-03
Xe-135	Ci	2.84E-01	2.32E-02	6.29E-03	1.99E-02	3.33E-01
Xe-133	Ci	2.06E+00	3.22E-01	1.02E-01	1.16E-01	2.60E+00
Xe-137	Ci	2.22E-03	0.00E+00	0.00E+00	0.00E+00	2.22E-03
<b>Total For Period</b>	<b>Ci</b>	<b>2.54E+00</b>	<b>9.15E-01</b>	<b>2.79E-01</b>	<b>4.09E-01</b>	<b>4.14E+00</b>
<b>B. Iodines and Halogens</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>C. Particulates</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>D. Tritium</b>						
H-3	Ci	7.22E-01	1.82E+00	9.48E-01	7.00E-01	4.19E+00
<b>E. Gross Alpha</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>F. Carbon-14</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<u>Total Release</u>	<u>Units</u>	<u>1ST Quarter</u>	<u>2ND Quarter</u>	<u>3RD Quarter</u>	<u>4TH Quarter</u>	<u>Annual</u>	<u>Uncertainty</u>
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	3.71E+01	2.44E-01	2.89E-01	2.85E+00	4.05E+01	
2. Average Release Rate for Period	uCi/s	4.77E+00	3.10E-02	3.63E-02	3.59E-01	1.28E+00	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	9.27E-04	2.22E-07	0.00E+00	0.00E+00	9.27E-04	
2. Average Release Rate for Period	uCi/s	1.19E-04	2.82E-08	0.00E+00	0.00E+00	2.94E-05	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	1.53E-07	1.18E-06	0.00E+00	0.00E+00	1.33E-06	
2. Average Release Rate for Period	uCi/s	1.96E-08	1.50E-07	0.00E+00	0.00E+00	4.22E-08	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	4.21E+00	1.51E-01	3.83E-01	1.81E+00	6.56E+00	
2. Average Release Rate for Period	uCi/s	5.42E-01	1.93E-02	4.82E-02	2.28E-01	2.08E-01	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	8.34E-09	7.36E-09	4.10E-09	0.00E+00	1.98E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	1.76E+00	2.88E+00	2.88E+00	2.80E+00	1.03E+01	
2. Average Release Rate for Period	uCi/s	2.26E-01	3.66E-01	3.62E-01	3.52E-01	3.27E-01	
3. Percent of Limit	%						

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	2.80E+00	0.00E+00	0.00E+00	0.00E+00	2.80E+00
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	1.45E+00	1.45E+00
Xe-133	Ci	2.00E+01	0.00E+00	0.00E+00	0.00E+00	2.00E+01
<b>Total For Period</b>	<b>CI</b>	<b>2.28E+01</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>1.45E+00</b>	<b>2.42E+01</b>
<b>B. Iodines and Halogens</b>						
I-131	Ci	8.43E-04	2.22E-07	0.00E+00	0.00E+00	8.43E-04
I-133	Ci	8.35E-05	0.00E+00	0.00E+00	0.00E+00	8.35E-05
<b>Total For Period</b>	<b>CI</b>	<b>9.26E-04</b>	<b>2.22E-07</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>9.27E-04</b>
<b>C. Particulates</b>						
Cs-137	Ci	0.00E+00	1.18E-06	0.00E+00	0.00E+00	1.18E-06
<b>D. Tritium</b>						
H-3	Ci	2.93E+00	0.00E+00	0.00E+00	0.00E+00	2.93E+00
<b>E. Gross Alpha</b>						
G-Alpha	Ci	8.34E-09	7.36E-09	4.10E-09	0.00E+00	1.98E-08
<b>F. Carbon-14</b>						
C-14	Ci	1.76E+00	2.88E+00	2.88E+00	2.80E+00	1.03E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.



**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	CI	2.33E+00	2.03E-01	2.07E-01	1.25E+00	3.99E+00
Kr-85m	CI	0.00E+00	3.29E-05	0.00E+00	0.00E+00	3.29E-05
Kr-85	CI	3.40E-01	3.64E-03	2.79E-02	0.00E+00	3.71E-01
Xe-127	CI	0.00E+00	8.33E-05	0.00E+00	4.60E-04	5.43E-04
Xe-131m	CI	1.58E-02	0.00E+00	1.90E-05	5.31E-05	1.59E-02
Xe-135	CI	0.00E+00	1.06E-03	1.53E-03	5.05E-04	3.10E-03
Xe-133m	CI	9.00E-06	0.00E+00	0.00E+00	0.00E+00	9.00E-06
Xe-137	CI	0.00E+00	0.00E+00	9.18E-03	0.00E+00	9.18E-03
Xe-133	CI	1.16E+01	3.56E-02	4.34E-02	1.49E-01	1.18E+01
<b>Total For Period</b>	<b>CI</b>	<b>1.43E+01</b>	<b>2.44E-01</b>	<b>2.89E-01</b>	<b>1.40E+00</b>	<b>1.62E+01</b>
<b>B. Iodines and Halogens</b>						
I-131	CI	3.93E-07	0.00E+00	0.00E+00	0.00E+00	3.93E-07
I-133	CI	2.63E-07	0.00E+00	0.00E+00	0.00E+00	2.63E-07
<b>Total For Period</b>	<b>CI</b>	<b>6.56E-07</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>6.56E-07</b>
<b>C. Particulates</b>						
Co-60	CI	1.53E-07	0.00E+00	0.00E+00	0.00E+00	1.53E-07
<b>D. Tritium</b>						
H-3	CI	1.28E+00	1.51E-01	3.83E-01	1.81E+00	3.63E+00
<b>E. Gross Alpha</b>						
No Nuclides Found	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				Annual
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	
<b>F. Carbon-14</b>						
No Nuclides Found	ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Total Release</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>	<b>Uncertainty</b>
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	2.22E-02	2.22E-03	1.79E-03	4.46E-03	3.07E-02	
2. Average Concentration	uCi/mL	3.76E-10	1.72E-10	2.46E-11	4.52E-11	1.26E-10	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	2.03E+02	4.39E+01	1.62E+02	1.17E+02	5.27E+02	
2. Average Concentration	uCi/mL	3.44E-06	3.40E-06	2.23E-06	1.19E-06	2.16E-06	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	3.81E-01	0.00E+00	2.02E-04	0.00E+00	3.81E-01	
2. Average Concentration	uCi/mL	6.44E-09	0.00E+00	2.77E-12	0.00E+00	1.56E-09	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	2.50E+06	5.87E+05	8.14E+07	3.20E+07	1.17E+08	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	5.91E+10	1.29E+10	7.28E+10	9.86E+10	2.43E+11	

**Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<u>Total Release</u>	<u>Units</u>	<u>1ST Quarter</u>	<u>2ND Quarter</u>	<u>3RD Quarter</u>	<u>4TH Quarter</u>	<u>Annual</u>	<u>Uncertainty</u>
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	1.11E-02	1.11E-03	8.95E-04	2.23E-03	1.53E-02	
2. Average Concentration	uCi/mL	3.76E-10	1.72E-10	2.46E-11	4.52E-11	1.26E-10	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	1.02E+02	2.19E+01	8.10E+01	5.87E+01	2.63E+02	
2. Average Concentration	uCi/mL	3.44E-06	3.40E-06	2.23E-06	1.19E-06	2.16E-06	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	1.90E-01	0.00E+00	1.01E-04	0.00E+00	1.90E-01	
2. Average Concentration	uCi/mL	6.44E-09	0.00E+00	2.77E-12	0.00E+00	1.56E-09	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	1.25E+06	2.94E+05	4.07E+07	1.60E+07	5.83E+07	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	2.95E+10	6.46E+09	3.64E+10	4.93E+10	1.22E+11	

Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases

Unit: PSL2

Starting: 1-Jan-2017 Ending: 31-Dec-2017

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	1.11E-02	1.11E-03	8.95E-04	2.23E-03	1.53E-02	
2. Average Concentration	uCi/mL	3.76E-10	1.72E-10	2.46E-11	4.52E-11	1.26E-10	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	1.02E+02	2.19E+01	8.10E+01	5.87E+01	2.63E+02	
2. Average Concentration	uCi/mL	3.44E-06	3.40E-06	2.23E-06	1.19E-06	2.16E-06	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	1.90E-01	0.00E+00	1.01E-04	0.00E+00	1.90E-01	
2. Average Concentration	uCi/mL	6.44E-09	0.00E+00	2.77E-12	0.00E+00	1.56E-09	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	1.25E+06	2.94E+05	4.07E+07	1.60E+07	5.83E+07	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	2.95E+10	6.46E+09	3.64E+10	4.93E+10	1.22E+11	

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Continuous Mode**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Nuclides Released</b>	<b>Units</b>	<b>Continuous Mode</b>				<b>Annual</b>
		<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	
<b>A. Fission and Activation Products</b>						
No Nuclides Found	Cl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>B. Tritium</b>						
No Nuclides Found	Cl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>C. Dissolved and Entrained Gases</b>						
No Nuclides Found	Cl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Cl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				Annual
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	
<b>A. Fission and Activation Products</b>						
C-14	Ci	0.00E+00	0.00E+00	4.22E-04	2.30E-03	2.72E-03
Na-24	Ci	1.90E-06	1.25E-05	0.00E+00	1.03E-05	2.47E-05
Be-7	Ci	0.00E+00	0.00E+00	0.00E+00	7.85E-05	7.85E-05
Cr-51	Ci	1.09E-03	5.64E-05	0.00E+00	2.93E-05	1.18E-03
Mn-54	Ci	3.73E-04	7.43E-06	1.93E-05	2.02E-05	4.20E-04
Fe-59	Ci	5.62E-05	0.00E+00	0.00E+00	0.00E+00	5.62E-05
Co-58	Ci	2.24E-03	9.45E-05	4.71E-05	1.21E-04	2.50E-03
Co-60	Ci	6.41E-03	1.97E-04	2.06E-04	2.32E-04	7.04E-03
Ni-63	Ci	0.00E+00	0.00E+00	0.00E+00	4.25E-04	4.25E-04
Ni-65	Ci	1.03E-05	0.00E+00	0.00E+00	0.00E+00	1.03E-05
Zn-65	Ci	1.61E-04	0.00E+00	0.00E+00	1.64E-05	1.77E-04
Zr-95	Ci	4.28E-04	7.69E-06	5.98E-06	2.10E-05	4.62E-04
Nb-95	Ci	8.43E-04	1.56E-05	3.50E-05	2.53E-05	9.19E-04
Nb-97	Ci	4.82E-03	1.31E-04	1.40E-04	2.97E-04	5.39E-03
Tc-99m	Ci	0.00E+00	0.00E+00	0.00E+00	2.76E-06	2.76E-06
Ag-110m	Ci	3.93E-03	1.17E-04	1.26E-04	2.29E-04	4.40E-03
Sn-113	Ci	6.60E-06	0.00E+00	0.00E+00	0.00E+00	6.60E-06
Sn-117m	Ci	3.67E-04	0.00E+00	0.00E+00	0.00E+00	3.67E-04
Sb-124	Ci	2.60E-04	5.07E-04	8.21E-05	1.20E-04	9.70E-04
Sb-122	Ci	0.00E+00	0.00E+00	0.00E+00	5.94E-06	5.94E-06
Sb-125	Ci	4.97E-04	1.00E-03	6.54E-04	5.19E-04	2.67E-03
Te-123m	Ci	1.92E-04	4.68E-05	1.63E-05	0.00E+00	2.55E-04
Te-129m	Ci	1.82E-04	0.00E+00	0.00E+00	0.00E+00	1.82E-04
Te-129	Ci	1.52E-05	0.00E+00	0.00E+00	0.00E+00	1.52E-05
Te-132	Ci	7.78E-05	0.00E+00	0.00E+00	0.00E+00	7.78E-05
I-130	Ci	0.00E+00	5.11E-06	0.00E+00	0.00E+00	5.11E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
I-131	Ci	3.96E-05	0.00E+00	0.00E+00	0.00E+00	3.96E-05
I-132	Ci	6.88E-05	0.00E+00	0.00E+00	0.00E+00	6.88E-05
I-135	Ci	1.67E-05	0.00E+00	0.00E+00	0.00E+00	1.67E-05
Cs-134	Ci	3.54E-05	0.00E+00	9.37E-06	0.00E+00	4.48E-05
Cs-136	Ci	7.62E-06	0.00E+00	0.00E+00	0.00E+00	7.62E-06
Cs-137	Ci	3.41E-05	1.97E-05	2.62E-05	1.10E-05	9.09E-05
La-140	Ci	2.25E-05	0.00E+00	0.00E+00	0.00E+00	2.25E-05
<b>Total For Period</b>	<b>Ci</b>	<b>2.22E-02</b>	<b>2.22E-03</b>	<b>1.79E-03</b>	<b>4.46E-03</b>	<b>3.07E-02</b>
<b>B. Tritium</b>						
H-3	Ci	2.03E+02	4.39E+01	1.62E+02	1.17E+02	5.27E+02
<b>C. Dissolved and Entrained Gases</b>						
Ar-41	Ci	2.98E-05	0.00E+00	0.00E+00	0.00E+00	2.98E-05
Kr-87	Ci	3.25E-06	0.00E+00	0.00E+00	0.00E+00	3.25E-06
Xe-131m	Ci	8.38E-03	0.00E+00	0.00E+00	0.00E+00	8.38E-03
Xe-133m	Ci	9.16E-04	0.00E+00	0.00E+00	0.00E+00	9.16E-04
Xe-133	Ci	3.71E-01	0.00E+00	2.02E-04	0.00E+00	3.71E-01
<b>Total For Period</b>	<b>Ci</b>	<b>3.81E-01</b>	<b>0.00E+00</b>	<b>2.02E-04</b>	<b>0.00E+00</b>	<b>3.81E-01</b>
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radiopactivity was present at detectable levels.



**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				Annual
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	
<b>A. Fission and Activation Products</b>						
C-14	CI	0.00E+00	0.00E+00	2.11E-04	1.15E-03	1.36E-03
Na-24	CI	9.49E-07	6.25E-06	0.00E+00	5.17E-06	1.24E-05
Be-7	CI	0.00E+00	0.00E+00	0.00E+00	3.92E-05	3.92E-05
Cr-51	CI	5.47E-04	2.82E-05	0.00E+00	1.46E-05	5.90E-04
Mn-54	CI	1.86E-04	3.72E-06	9.66E-06	1.01E-05	2.10E-04
Fe-59	CI	2.81E-05	0.00E+00	0.00E+00	0.00E+00	2.81E-05
Co-58	CI	1.12E-03	4.73E-05	2.36E-05	6.03E-05	1.25E-03
Co-60	CI	3.20E-03	9.84E-05	1.03E-04	1.16E-04	3.52E-03
Ni-63	CI	0.00E+00	0.00E+00	0.00E+00	2.12E-04	2.12E-04
Ni-65	CI	5.15E-06	0.00E+00	0.00E+00	0.00E+00	5.15E-06
Zn-65	CI	8.04E-05	0.00E+00	0.00E+00	8.18E-06	8.85E-05
Zr-95	CI	2.14E-04	3.85E-06	2.99E-06	1.05E-05	2.31E-04
Nb-95	CI	4.21E-04	7.81E-06	1.75E-05	1.27E-05	4.59E-04
Nb-97	CI	2.41E-03	6.55E-05	7.01E-05	1.48E-04	2.70E-03
Tc-99m	CI	0.00E+00	0.00E+00	0.00E+00	1.38E-06	1.38E-06
Ag-110m	CI	1.97E-03	5.83E-05	6.28E-05	1.14E-04	2.20E-03
Sn-113	CI	3.30E-06	0.00E+00	0.00E+00	0.00E+00	3.30E-06
Sn-117m	CI	1.83E-04	0.00E+00	0.00E+00	0.00E+00	1.83E-04
Sb-124	CI	1.30E-04	2.54E-04	4.10E-05	6.01E-05	4.85E-04
Sb-122	CI	0.00E+00	0.00E+00	0.00E+00	2.97E-06	2.97E-06
Sb-125	CI	2.49E-04	5.00E-04	3.27E-04	2.60E-04	1.34E-03
Te-123m	CI	9.61E-05	2.34E-05	8.16E-06	0.00E+00	1.28E-04
Te-129m	CI	9.10E-05	0.00E+00	0.00E+00	0.00E+00	9.10E-05
Te-129	CI	7.60E-06	0.00E+00	0.00E+00	0.00E+00	7.60E-06
Te-132	CI	3.89E-05	0.00E+00	0.00E+00	0.00E+00	3.89E-05
I-130	CI	0.00E+00	2.55E-06	0.00E+00	0.00E+00	2.55E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
I-131	Ci	1.98E-05	0.00E+00	0.00E+00	0.00E+00	1.98E-05
I-132	Ci	3.44E-05	0.00E+00	0.00E+00	0.00E+00	3.44E-05
Cs-134	Ci	1.77E-05	0.00E+00	4.68E-06	0.00E+00	2.24E-05
I-135	Ci	8.37E-06	0.00E+00	0.00E+00	0.00E+00	8.37E-06
Cs-136	Ci	3.81E-06	0.00E+00	0.00E+00	0.00E+00	3.81E-06
Cs-137	Ci	1.70E-05	9.84E-06	1.31E-05	5.48E-06	4.54E-05
La-140	Ci	1.12E-05	0.00E+00	0.00E+00	0.00E+00	1.12E-05
<b>Total For Period</b>	<b>Ci</b>	<b>1.11E-02</b>	<b>1.11E-03</b>	<b>8.95E-04</b>	<b>2.23E-03</b>	<b>1.53E-02</b>
<b>B. Tritium</b>						
H-3	Ci	1.02E+02	2.19E+01	8.10E+01	5.87E+01	2.63E+02
<b>C. Dissolved and Entrained Gases</b>						
Ar-41	Ci	1.49E-05	0.00E+00	0.00E+00	0.00E+00	1.49E-05
Kr-87	Ci	1.62E-06	0.00E+00	0.00E+00	0.00E+00	1.62E-06
Xe-131m	Ci	4.19E-03	0.00E+00	0.00E+00	0.00E+00	4.19E-03
Xe-133m	Ci	4.58E-04	0.00E+00	0.00E+00	0.00E+00	4.58E-04
Xe-133	Ci	1.86E-01	0.00E+00	1.01E-04	0.00E+00	1.86E-01
<b>Total For Period</b>	<b>Ci</b>	<b>1.90E-01</b>	<b>0.00E+00</b>	<b>1.01E-04</b>	<b>0.00E+00</b>	<b>1.90E-01</b>
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Products</b>						
C-14	Ci	0.00E+00	0.00E+00	2.11E-04	1.15E-03	1.36E-03
Na-24	Ci	9.49E-07	6.25E-06	0.00E+00	5.17E-06	1.24E-05
Be-7	Ci	0.00E+00	0.00E+00	0.00E+00	3.92E-05	3.92E-05
Cr-51	Ci	5.47E-04	2.82E-05	0.00E+00	1.46E-05	5.90E-04
Mn-54	Ci	1.86E-04	3.72E-06	9.66E-06	1.01E-05	2.10E-04
Fe-59	Ci	2.81E-05	0.00E+00	0.00E+00	0.00E+00	2.81E-05
Co-58	Ci	1.12E-03	4.73E-05	2.36E-05	6.03E-05	1.25E-03
Co-60	Ci	3.20E-03	9.84E-05	1.03E-04	1.16E-04	3.52E-03
Ni-63	Ci	0.00E+00	0.00E+00	0.00E+00	2.12E-04	2.12E-04
Ni-65	Ci	5.15E-06	0.00E+00	0.00E+00	0.00E+00	5.15E-06
Zn-65	Ci	8.04E-05	0.00E+00	0.00E+00	8.18E-06	8.85E-05
Zr-95	Ci	2.14E-04	3.85E-06	2.99E-06	1.05E-05	2.31E-04
Nb-95	Ci	4.21E-04	7.81E-06	1.75E-05	1.27E-05	4.59E-04
Nb-97	Ci	2.41E-03	6.55E-05	7.01E-05	1.48E-04	2.70E-03
Tc-99m	Ci	0.00E+00	0.00E+00	0.00E+00	1.38E-06	1.38E-06
Ag-110m	Ci	1.97E-03	5.83E-05	6.28E-05	1.14E-04	2.20E-03
Sn-113	Ci	3.30E-06	0.00E+00	0.00E+00	0.00E+00	3.30E-06
Sn-117m	Ci	1.83E-04	0.00E+00	0.00E+00	0.00E+00	1.83E-04
Sb-124	Ci	1.30E-04	2.54E-04	4.10E-05	6.01E-05	4.85E-04
Sb-122	Ci	0.00E+00	0.00E+00	0.00E+00	2.97E-06	2.97E-06
Sb-125	Ci	2.49E-04	5.00E-04	3.27E-04	2.60E-04	1.34E-03
Te-123m	Ci	9.61E-05	2.34E-05	8.16E-06	0.00E+00	1.28E-04
Te-129m	Ci	9.10E-05	0.00E+00	0.00E+00	0.00E+00	9.10E-05
Te-129	Ci	7.60E-06	0.00E+00	0.00E+00	0.00E+00	7.60E-06
Te-132	Ci	3.89E-05	0.00E+00	0.00E+00	0.00E+00	3.89E-05
I-130	Ci	0.00E+00	2.55E-06	0.00E+00	0.00E+00	2.55E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

Nuclides Released	Units	Batch Mode				Annual
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	
I-131	Ci	1.98E-05	0.00E+00	0.00E+00	0.00E+00	1.98E-05
I-132	Ci	3.44E-05	0.00E+00	0.00E+00	0.00E+00	3.44E-05
Cs-134	Ci	1.77E-05	0.00E+00	4.68E-06	0.00E+00	2.24E-05
I-135	Ci	8.37E-06	0.00E+00	0.00E+00	0.00E+00	8.37E-06
Cs-136	Ci	3.81E-06	0.00E+00	0.00E+00	0.00E+00	3.81E-06
Cs-137	Ci	1.70E-05	9.84E-06	1.31E-05	5.48E-06	4.54E-05
La-140	Ci	1.12E-05	0.00E+00	0.00E+00	0.00E+00	1.12E-05
<b>Total For Period</b>	<b>Ci</b>	<b>1.11E-02</b>	<b>1.11E-03</b>	<b>8.95E-04</b>	<b>2.23E-03</b>	<b>1.53E-02</b>
<b>B. Tritium</b>						
H-3	Ci	1.02E+02	2.19E+01	8.10E+01	5.87E+01	2.63E+02
<b>C. Dissolved and Entrained Gases</b>						
Ar-41	Ci	1.49E-05	0.00E+00	0.00E+00	0.00E+00	1.49E-05
Kr-87	Ci	1.62E-06	0.00E+00	0.00E+00	0.00E+00	1.62E-06
Xe-131m	Ci	4.19E-03	0.00E+00	0.00E+00	0.00E+00	4.19E-03
Xe-133m	Ci	4.58E-04	0.00E+00	0.00E+00	0.00E+00	4.58E-04
Xe-133	Ci	1.86E-01	0.00E+00	1.01E-04	0.00E+00	1.86E-01
<b>Total For Period</b>	<b>Ci</b>	<b>1.90E-01</b>	<b>0.00E+00</b>	<b>1.01E-04</b>	<b>0.00E+00</b>	<b>1.90E-01</b>
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

TABLE 3.2

SOLID WASTE STORAGE AND SHIPMENTS  
(6 PAGES)

# NRC Regulatory Guide 1.21 Reports

Report Date : 1/2/2018

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
 During Period From 01/01/2017 to 12/31/2017 Percent Cutoff: 1

Waste Stream : Resins, Filters, and Evap Bottoms  
 10-160 liner

Waste Class	Volume		Curies Shipped	% Error (Ci)
	Ft <sup>3</sup>	M <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/- 25%
B	1.45E+02	4.11E+00	1.72E+04	+/- 25%
C	0.00E+00	0.00E+00	0.00E+00	+/- 25%
All	0.00E+00	0.00E+00	0.00E+00	+/- 25%

Waste Stream : Dry Active Waste  
 DAW 20' Sealand

Waste Class	Volume		Curies Shipped	%Error (Ci)
	Ft <sup>3</sup>	M <sup>3</sup>		
A	1.45E+04	4.11E+02	1.81E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.45E+04	4.11E+02	1.81E+00	+/-25%

Waste Stream : Irradiated Components

Waste Class	Volume		Curies Shipped	% Error (Ci)
	Ft <sup>3</sup>	M <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

## NRC Regulatory Guide 1.21 Reports

Report Date : 1/2/2018

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
 During Period From 01/01/2017 to 12/31/2017 Percent Cutoff: 1

Waste Stream : Other Waste

Waste Class	Volume		Curies Shipped	% Error (Ci)
	Ft <sup>3</sup>	M <sup>3</sup>		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Waste Stream : Sum of All 4 Categories  
 DAW 20' Sealand, 10-160 Liner

Waste Class	Volume		Curies Shipped	% Error (Ci)
	Ft <sup>3</sup>	M <sup>3</sup>		
A	1.45E+04	4.11E+02	1.81E+00	+/-25%
B	1.45E+02	4.11E+00	1.72E+04	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.46E+04	4.15E+02	1.90E+04	+/-25%

## NRC Regulatory Guide 1.21 Reports

Page 3

Report Date : 1/2/2018

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Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
During Period From 01/01/2017 to 12/31/2017

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Number of Shipments	Mode of Transportation	Destination
1	Hittman Transport (TN)	Energy Solutions, (DTK) Gallaher Road
8	Hittman Transport (TN)	EnergySolutions Bear Creek



# NRC Regulatory Guide 1.21 Reports

Report Date : 1/2/2018

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
 During Period From 01/01/2017 to 12/31/2017 Percent Cutoff: 1

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	7.479%	1.35E-01
Cr-51	3.536%	6.39E-02
Fe-55	61.859%	1.12E+00
Co-58	3.429%	6.20E-02
Co-60	14.848%	2.68E-01
Ni-63	5.824%	1.05E-01
Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	7.479%	1.35E-01
Cr-51	3.536%	6.39E-02
Fe-55	61.859%	1.12E+00
Co-58	3.429%	6.20E-02
Co-60	14.848%	2.68E-01
Ni-63	5.824%	1.05E-01
Other Waste		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
Be-7	2.013%	3.47E-01
Mn-54	3.348%	5.77E-01
Fe-55	20.607%	3.55E+00
Co-58	4.344%	7.48E-01
Co-60	20.143%	3.47E+00
Ni-63	39.638%	6.83E+00
Zn-65	1.171%	2.02E-01
Cs-137	6.786%	1.17E+00
Other Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Be-7	2.013%	3.47E-01
Mn-54	3.348%	5.77E-01
Fe-55	20.607%	3.55E+00
Co-58	4.344%	7.48E-01
Co-60	20.143%	3.47E+00
Ni-63	39.638%	6.83E+00
Zn-65	1.171%	2.02E-01
Cs-137	6.786%	1.17E+00
Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	7.479%	1.35E-01
Cr-51	3.536%	6.39E-02
Fe-55	61.859%	1.12E+00

# NRC Regulatory Guide 1.21 Reports

Report Date : 1/2/2018

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
 During Period From 01/01/2017 to 12/31/2017 Percent Cutoff: 1

Co-58	3.429%	6.20E-02
Co-60	14.848%	2.68E-01
Ni-63	5.824%	1.05E-01
Sum of All 4 Categories		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
Be-7	2.013%	3.47E-01
Mn-54	3.348%	5.77E-01
Fe-55	20.607%	3.55E+00
Co-58	4.344%	7.48E-01
Co-60	20.143%	3.47E+00
Ni-63	39.638%	6.83E+00
Zn-65	1.171%	2.02E-01
Cs-137	6.786%	1.17E+00
Sum of All 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Be-7	1.822%	3.47E-01
Mn-54	3.098%	5.90E-01
Fe-55	24.526%	4.67E+00
Co-58	4.257%	8.10E-01
Co-60	19.640%	3.74E+00
Ni-63	36.426%	6.93E+00
Zn-65	1.076%	2.05E-01
Cs-137	6.145%	1.17E+00

## NRC Regulatory Guide 1.21 Reports

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Report Date : 1/2/2018

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream  
During Period From 01/01/2017 to 12/31/2017

Manifest Number	Date Shipped	Waste Volume Used	Burial volume Used
FPL/PSL 17-070	9/6/2017	Yes	
FPL/PSL 17-069	9/6/2017	Yes	
FPL/PSL 17-046	3/15/2017	Yes	
FPL/PSL 17-036	3/8/2017	Yes	
FPL/PSL 17-030	3/1/2017	Yes	
FPL/PSL 17-026	2/22/2017	Yes	
FPL/PSL 17-024	2/16/2017	Yes	
FPL/PSL-17-020	2/10/2017	Yes	
FPL/PSL 17-013	1/25/2017	Yes	

TABLE 3.3  
DOSE ASSESSMENTS  
(18 PAGES)

**Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	1.13E-03	1.47E-03	1.46E-03	1.51E-03	5.57E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.07E-03	1.29E-03	1.30E-03	1.34E-03	5.01E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.07E-03	1.29E-03	1.30E-03	1.34E-03	5.01E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.27E-02	1.29E-03	1.30E-03	1.34E-03	1.27E-02
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	1.95E-04	1.96E-04	2.00E-04	2.45E-04	8.37E-04
Limit	mRem					
Percent of Limit	%					
Lung	mRem	1.07E-03	1.29E-03	1.30E-03	1.34E-03	5.01E-03
Limit	mRem					
Percent of Limit	%					
GI-LI	mRem	1.07E-03	1.29E-03	1.30E-03	1.34E-03	5.01E-03
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2017

Site/Unit/Discharge Point: Site

**Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW Site Boundary - In	Infant	5.572E-03	5.010E-03	5.009E-03	5.519E-03	8.365E-04	5.011E-03	5.008E-03	0.000E+00
WNW Site Boundary - I	Infant	1.927E-05	1.927E-05	1.927E-05	1.927E-05	1.927E-05	1.927E-05	1.927E-05	0.000E+00
Maximum Doserate by Organ:		5.572E-03	5.010E-03	5.009E-03	5.519E-03	8.365E-04	5.011E-03	5.008E-03	0.000E+00

Maximum Organ Doserate (mRem/yr): 5.572E-03

Maximum Total Body Doserate (mRem/yr): 5.009E-03

**Site Boundary NG Doserate Summary**

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	4.271E-03	2.847E-03	4.002E-03	6.282E-03
WNW Site Boundary	3.679E-03	2.452E-03	3.448E-03	5.411E-03
Maximum NG Dose Rate:	4.271E-03	2.847E-03	4.002E-03	6.282E-03

Period: Ann, 2017

Site/Unit/Discharge Point: Site

**Maximum Individual NNG Dose Summary - Note: All Doses in mRem**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW - Near Milk - Adult	Adult	8.143E-06	9.876E-06	7.443E-06	1.814E-03	1.369E-05	4.487E-06	5.682E-06	0.000E+00
NW Near Milk - Child	Child	2.062E-05	2.100E-05	1.652E-05	5.293E-03	1.416E-05	4.578E-06	5.609E-06	0.000E+00
NW Near Milk - Infant	Infant	3.831E-05	4.485E-05	2.733E-05	1.268E-02	1.346E-05	4.599E-06	5.686E-06	0.000E+00
NW Near Milk - Teenager	Teenager	1.101E-05	1.385E-05	9.851E-06	2.710E-03	1.639E-05	4.642E-06	6.003E-06	0.000E+00
SE Nearest Res - Adult	Adult	2.475E-05	2.493E-05	2.467E-05	2.197E-04	2.535E-05	2.564E-05	2.450E-05	0.000E+00
SE Nearest Res - Child	Child	2.509E-05	2.511E-05	2.489E-05	2.791E-04	2.479E-05	2.585E-05	2.439E-05	0.000E+00
SE Nearest Res - Infant	Infant	2.494E-05	2.505E-05	2.473E-05	2.576E-04	2.450E-05	2.555E-05	2.435E-05	0.000E+00
SE Nearest Res - Teenager	Teenager	2.489E-05	2.513E-05	2.479E-05	2.531E-04	2.535E-05	2.621E-05	2.448E-05	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	1.148E-05	1.156E-05	1.145E-05	9.657E-05	1.174E-05	1.187E-05	1.137E-05	0.000E+00
W Near Garden - Adult	Adult	1.158E-05	1.166E-05	1.155E-05	9.206E-05	1.183E-05	1.195E-05	1.148E-05	0.000E+00
W Near Garden - Child	Child	1.173E-05	1.173E-05	1.164E-05	1.166E-04	1.160E-05	1.204E-05	1.144E-05	0.000E+00
W Near Garden - Teenager	Teenager	1.164E-05	1.174E-05	1.160E-05	1.059E-04	1.183E-05	1.219E-05	1.147E-05	0.000E+00
Maximum Dose by Organ:		3.831E-05	4.485E-05	2.733E-05	1.268E-02	2.535E-05	2.621E-05	2.450E-05	0.000E+00

Maximum Organ Dose (mRem): 1.268E-02  
 Maximum Total Body Dose (mRem): 2.733E-05

**Maximum Individual NG Dose Summary**

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	3.737E-04	2.491E-04	3.502E-04	5.497E-04
SE Nearest Res 1.52 mi 142 deg	1.901E-03	1.267E-03	1.781E-03	2.796E-03
SE Visitor @ 1 mi	8.232E-04	5.486E-04	7.713E-04	1.211E-03
W Near Gard 2.0 miles	6.540E-04	4.359E-04	6.128E-04	9.619E-04
Maximum NG Dose:	1.901E-03	1.267E-03	1.781E-03	2.796E-03

**Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	6.78E-04	7.32E-04	7.23E-04	7.90E-04	2.92E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	5.93E-04	6.61E-04	6.67E-04	6.94E-04	2.61E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	5.93E-04	6.61E-04	6.67E-04	6.94E-04	2.61E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	5.97E-04	6.61E-04	6.67E-04	6.94E-04	2.62E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	9.76E-05	1.04E-04	1.09E-04	1.43E-04	4.54E-04
Limit	mRem					
Percent of Limit	%					
Lung	mRem	5.93E-04	6.61E-04	6.67E-04	6.96E-04	2.62E-03
Limit	mRem					
Percent of Limit	%					
GI-Li	mRem	5.93E-04	6.61E-04	6.67E-04	6.94E-04	2.61E-03
Limit	mRem					
Percent of Limit	%					



Period: Ann, 2017

Site/Unit/Discharge Point: PSL1

**Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LIi	Skin
NW Site Boundary - In	Infant	2.923E-03	2.615E-03	2.615E-03	2.619E-03	4.537E-04	2.618E-03	2.615E-03	0.000E+00
WNW Site Boundary - I	Infant	1.345E-05	1.345E-05	1.345E-05	1.345E-05	1.345E-05	1.345E-05	1.345E-05	0.000E+00
Maximum Doserate by Organ:		2.923E-03	2.615E-03	2.615E-03	2.619E-03	4.537E-04	2.618E-03	2.615E-03	0.000E+00

Maximum Organ Doserate (mRem/yr): 2.923E-03

Maximum Total Body Doserate (mRem/yr): 2.615E-03

**Site Boundary NG Doserate Summary**

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	6.564E-04	4.078E-04	6.172E-04	9.674E-04
WNW Site Boundary	5.655E-04	3.513E-04	5.317E-04	8.334E-04
Maximum NG Dose Rate:	6.564E-04	4.078E-04	6.172E-04	9.674E-04

Period: Ann, 2017

Site/Unit/Discharge Point: PSL1

**Maximum Individual NNG Dose Summary - Note: All Doses in mRem**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Li	Skin
NW - Near Milk - Adult	Adult	3.789E-06	3.807E-06	3.790E-06	1.948E-05	3.838E-06	4.067E-06	3.837E-06	0.000E+00
NW Near Milk - Child	Child	3.894E-06	3.905E-06	3.884E-06	4.970E-05	3.842E-06	4.116E-06	3.813E-06	0.000E+00
NW Near Milk - Infant	Infant	4.042E-06	4.113E-06	3.993E-06	1.139E-04	3.836E-06	4.046E-06	3.808E-06	0.000E+00
NW Near Milk - Teenager	Teenager	3.813E-06	3.842E-06	3.815E-06	2.726E-05	3.861E-06	4.201E-06	3.840E-06	0.000E+00
SE Nearest Res - Adult	Adult	2.198E-05	2.199E-05	2.198E-05	2.364E-05	2.199E-05	2.330E-05	2.204E-05	0.000E+00
SE Nearest Res - Child	Child	2.198E-05	2.198E-05	2.198E-05	2.413E-05	2.198E-05	2.351E-05	2.200E-05	0.000E+00
SE Nearest Res - Infant	Infant	2.198E-05	2.198E-05	2.198E-05	2.394E-05	2.198E-05	2.321E-05	2.199E-05	0.000E+00
SE Nearest Res - Teenager	Teenager	2.198E-05	2.198E-05	2.198E-05	2.392E-05	2.199E-05	2.387E-05	2.203E-05	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	1.021E-05	1.021E-05	1.021E-05	1.093E-05	1.021E-05	1.078E-05	1.023E-05	0.000E+00
W Near Garden - Adult	Adult	1.031E-05	1.031E-05	1.031E-05	1.099E-05	1.031E-05	1.085E-05	1.033E-05	0.000E+00
W Near Garden - Child	Child	1.031E-05	1.031E-05	1.031E-05	1.119E-05	1.031E-05	1.094E-05	1.032E-05	0.000E+00
W Near Garden - Teenager	Teenager	1.031E-05	1.031E-05	1.031E-05	1.111E-05	1.031E-05	1.109E-05	1.033E-05	0.000E+00
Maximum Dose by Organ:		2.198E-05	2.199E-05	2.198E-05	1.139E-04	2.199E-05	2.387E-05	2.204E-05	0.000E+00

Maximum Organ Dose (mRem): 1.139E-04

Maximum Total Body Dose (mRem): 2.198E-05

**Maximum Individual NG Dose Summary**

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	5.744E-05	3.568E-05	5.401E-05	8.465E-05
SE Nearest Res 1.52 mi 142 deg	2.922E-04	1.815E-04	2.747E-04	4.306E-04
SE Visitor @ 1 mi	1.265E-04	7.859E-05	1.190E-04	1.864E-04
W Near Gard 2.0 miles	1.005E-04	6.244E-05	9.451E-05	1.481E-04
Maximum NG Dose:	2.922E-04	1.815E-04	2.747E-04	4.306E-04

**Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	4.55E-04	7.40E-04	7.38E-04	7.17E-04	2.65E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	4.79E-04	6.32E-04	6.35E-04	6.49E-04	2.39E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	4.78E-04	6.32E-04	6.35E-04	6.49E-04	2.39E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.26E-02	6.32E-04	6.35E-04	6.49E-04	1.26E-02
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	9.75E-05	9.18E-05	9.12E-05	1.02E-04	3.83E-04
Limit	mRem					
Percent of Limit	%					
Lung	mRem	4.77E-04	6.32E-04	6.35E-04	6.49E-04	2.39E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	4.77E-04	6.32E-04	6.35E-04	6.49E-04	2.39E-03
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2017

Site/Unit/Discharge Point: PSL2

**Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW Site Boundary - In	Infant	2.649E-03	2.395E-03	2.394E-03	2.900E-03	3.829E-04	2.393E-03	2.393E-03	0.000E+00
WNW Site Boundary - I	Infant	5.822E-06	5.822E-06	5.822E-06	5.822E-06	5.822E-06	5.822E-06	5.822E-06	0.000E+00
Maximum Doserate by Organ:		2.649E-03	2.395E-03	2.394E-03	2.900E-03	3.829E-04	2.393E-03	2.393E-03	0.000E+00

Maximum Organ Doserate (mRem/yr): 2.900E-03

Maximum Total Body Doserate (mRem/yr): 2.394E-03

**Site Boundary NG Doserate Summary**

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	3.615E-03	2.439E-03	3.385E-03	5.314E-03
WNW Site Boundary	3.114E-03	2.101E-03	2.916E-03	4.578E-03
Maximum NG Dose Rate:	3.615E-03	2.439E-03	3.385E-03	5.314E-03

Period: Ann, 2017

Site/Unit/Discharge Point: PSL2

**Maximum Individual NNG Dose Summary - Note: All Doses in mRem**

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Li	Skin
NW - Near Milk - Adult	Adult	4.354E-06	6.069E-06	3.653E-06	1.794E-03	9.852E-06	4.203E-07	1.845E-06	0.000E+00
NW Near Milk - Child	Child	1.673E-05	1.709E-05	1.264E-05	5.244E-03	1.032E-05	4.617E-07	1.796E-06	0.000E+00
NW Near Milk - Infant	Infant	3.427E-05	4.073E-05	2.333E-05	1.256E-02	9.620E-06	5.529E-07	1.878E-06	0.000E+00
NW Near Milk - Teenager	Teenager	7.202E-06	1.000E-05	6.036E-06	2.683E-03	1.252E-05	4.406E-07	2.163E-06	0.000E+00
SE Nearest Res - Adult	Adult	2.765E-06	2.946E-06	2.683E-06	1.960E-04	3.362E-06	2.342E-06	2.454E-06	0.000E+00
SE Nearest Res - Child	Child	3.109E-06	3.126E-06	2.912E-06	2.549E-04	2.813E-06	2.343E-06	2.391E-06	0.000E+00
SE Nearest Res - Infant	Infant	2.953E-06	3.065E-06	2.749E-06	2.337E-04	2.518E-06	2.343E-06	2.361E-06	0.000E+00
SE Nearest Res - Teenager	Teenager	2.909E-06	3.141E-06	2.805E-06	2.292E-04	3.362E-06	2.343E-06	2.451E-06	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	1.272E-06	1.351E-06	1.236E-06	8.564E-05	1.533E-06	1.088E-06	1.137E-06	0.000E+00
W Near Garden - Adult	Adult	1.273E-06	1.348E-06	1.239E-06	8.107E-05	1.519E-06	1.098E-06	1.145E-06	0.000E+00
W Near Garden - Child	Child	1.415E-06	1.422E-06	1.334E-06	1.054E-04	1.293E-06	1.099E-06	1.119E-06	0.000E+00
W Near Garden - Teenager	Teenager	1.333E-06	1.428E-06	1.290E-06	9.477E-05	1.519E-06	1.099E-06	1.143E-06	0.000E+00
Maximum Dose by Organ:		3.427E-05	4.073E-05	2.333E-05	1.256E-02	1.252E-05	2.343E-06	2.454E-06	0.000E+00

Maximum Organ Dose (mRem): 1.256E-02

Maximum Total Body Dose (mRem): 2.333E-05

**Maximum Individual NG Dose Summary**

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	3.163E-04	2.134E-04	2.962E-04	4.650E-04
SE Nearest Res 1.52 mi 142 deg	1.609E-03	1.086E-03	1.507E-03	2.365E-03
SE Visitor @ 1 mi	6.966E-04	4.701E-04	6.523E-04	1.024E-03
W Near Gard 2.0 miles	5.535E-04	3.735E-04	5.183E-04	8.138E-04
Maximum NG Dose:	1.609E-03	1.086E-03	1.507E-03	2.365E-03

**Reg. Guide 1.21, App B, Sec Air Doses Due To Gaseous Releases**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>NG Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Gamma Air	mRad	2.98E-03	3.73E-04	1.82E-04	7.38E-04	4.27E-03
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	2.26E-03	1.51E-04	8.02E-05	3.52E-04	2.85E-03
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	2.78E-03	3.54E-04	1.73E-04	6.97E-04	4.00E-03
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	4.43E-03	5.24E-04	2.62E-04	1.06E-03	6.28E-03
Limit	mRem					
Percent of Limit	%					

**Reg. Guide 1.21, App B, Sec Air Doses Due To Gaseous Releases**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>NG Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Gamma Air	mRad	1.65E-04	2.77E-04	8.28E-05	1.32E-04	6.56E-04
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	2.04E-04	1.15E-04	3.46E-05	5.40E-05	4.08E-04
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	1.51E-04	2.62E-04	7.85E-05	1.26E-04	6.17E-04
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	2.75E-04	3.89E-04	1.17E-04	1.87E-04	9.67E-04
Limit	mRem					
Percent of Limit	%					

**Reg. Guide 1.21, App B, Sec Air Doses Due To Gaseous Releases**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>NG Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Gamma Air	mRad	2.81E-03	9.67E-05	9.93E-05	6.06E-04	3.61E-03
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	2.06E-03	3.62E-05	4.56E-05	2.98E-04	2.44E-03
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	2.63E-03	9.19E-05	9.43E-05	5.71E-04	3.38E-03
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	4.16E-03	1.35E-04	1.46E-04	8.74E-04	5.31E-03
Limit	mRem					
Percent of Limit	%					



**Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases**

**Unit: Site**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	1.36E-03	1.18E-05	3.85E-05	5.50E-04	1.95E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	3.43E-03	2.38E-04	7.82E-04	8.63E-04	5.32E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	2.47E-03	2.47E-04	7.86E-04	7.89E-04	4.29E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	6.81E-04	2.21E-04	7.62E-04	6.94E-04	2.23E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	1.99E-03	2.84E-04	9.59E-04	8.96E-04	4.13E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	7.79E-04	5.22E-04	1.01E-03	8.86E-04	3.20E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	7.37E-02	1.85E-03	2.82E-03	3.40E-03	8.18E-02
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2017

Site/Unit/Discharge Point: Site

## Liquid Dose Summary - Note: All Doses in mRem

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	1.950E-03	5.316E-03	4.289E-03	2.234E-03	4.127E-03	3.197E-03	8.178E-02	0.000E+00
Liquid Receptor - Child	Child	1.399E-03	3.633E-03	3.602E-03	2.159E-03	1.807E-03	2.493E-03	3.413E-02	0.000E+00
Maximum Dose by Organ:		1.950E-03	5.316E-03	4.289E-03	2.234E-03	4.127E-03	3.197E-03	8.178E-02	0.000E+00

Maximum Organ Dose (mRem): 8.178E-02

Maximum Total Body Dose (mRem): 4.289E-03

**Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases**

**Unit: PSL1**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	6.78E-04	5.92E-06	1.92E-05	2.75E-04	9.75E-04
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.72E-03	1.19E-04	3.91E-04	4.31E-04	2.66E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.23E-03	1.24E-04	3.93E-04	3.94E-04	2.14E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	3.40E-04	1.11E-04	3.81E-04	3.47E-04	1.12E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	9.94E-04	1.42E-04	4.80E-04	4.48E-04	2.06E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	3.89E-04	2.61E-04	5.05E-04	4.43E-04	1.60E-03
Limit	mRem					
Percent of Limit	%					
GI-Li	mRem	3.69E-02	9.25E-04	1.41E-03	1.70E-03	4.09E-02
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2017

Site/Unit/Discharge Point: PSL1

**Liquid Dose Summary - Note: All Doses in mRem**

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	9.751E-04	2.658E-03	2.145E-03	1.117E-03	2.063E-03	1.599E-03	4.089E-02	0.000E+00
Liquid Receptor - Child	Child	6.996E-04	1.816E-03	1.801E-03	1.080E-03	9.036E-04	1.247E-03	1.707E-02	0.000E+00
Maximum Dose by Organ:		9.751E-04	2.658E-03	2.145E-03	1.117E-03	2.063E-03	1.599E-03	4.089E-02	0.000E+00

Maximum Organ Dose (mRem): 4.089E-02

Maximum Total Body Dose (mRem): 2.145E-03

**Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases**

**Unit: PSL2**

**Starting: 1-Jan-2017 Ending: 31-Dec-2017**

<b>Organ Dose</b>	<b>Units</b>	<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
Bone	mRem	6.78E-04	5.92E-06	1.92E-05	2.75E-04	9.75E-04
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.72E-03	1.19E-04	3.91E-04	4.31E-04	2.66E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.23E-03	1.24E-04	3.93E-04	3.94E-04	2.14E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	3.40E-04	1.11E-04	3.81E-04	3.47E-04	1.12E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	9.94E-04	1.42E-04	4.80E-04	4.48E-04	2.06E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	3.89E-04	2.61E-04	5.05E-04	4.43E-04	1.60E-03
Limit	mRem					
Percent of Limit	%					
GI-Li	mRem	3.69E-02	9.25E-04	1.41E-03	1.70E-03	4.09E-02
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2017

Site/Unit/Discharge Point: PSL2

## Liquid Dose Summary - Note: All Doses in mRem

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	9.751E-04	2.658E-03	2.145E-03	1.117E-03	2.063E-03	1.599E-03	4.089E-02	0.000E+00
Liquid Receptor - Child	Child	6.996E-04	1.816E-03	1.801E-03	1.080E-03	9.036E-04	1.247E-03	1.707E-02	0.000E+00
Maximum Dose by Organ:		9.751E-04	2.658E-03	2.145E-03	1.117E-03	2.063E-03	1.599E-03	4.089E-02	0.000E+00

Maximum Organ Dose (mRem): 4.089E-02

Maximum Total Body Dose (mRem): 2.145E-03

TABLE 3.4

VISITOR DOSE  
(1 PAGE)

### 3.4 Visitor Dose

Dose to a Member of the Public from Activities Inside the Site Boundary: Assessment of radiation dose from radioactive effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY assumes the VISITOR to be a lifeguard at the Walton Rocks Beach recreation area. The visitor is assumed to be onsite for 6 hours per day for 312 days per year at a distance of 1 mile in the South East Sector. The VISITOR received exposure from each of the two reactors on the site. Actual Met Data was used to calculate Visitor Dose for Calendar Year 2017.

VISITOR DOSE RESULTS FOR CALENDAR YEAR 2017 were:

<b>Noble Gas Dose</b>	<b>mrad</b>
Gamma Air Dose	2.36E-03
Beta Air Dose	1.58E-03

<b>Gas, Particulate, Iodine, Carbon Dose</b>	<b>mrem</b>
Bone	3.12E-03
Liver	2.80E-03
Thyroid	8.53E-03
Kidney	4.69E-04
Lung	2.81E-03
GI-LLI	2.80E-03
Total Body	2.80E-03



ENCLOSURE 2

C-200, OFFSITE DOSE CALCULATION MANUAL REVISION 50-  
(231 PAGES)