

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

April 30, 2010

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

Serial No. 10-218  
SS&L/TJN R0  
Docket Nos. 50-280  
50-281  
License Nos. DPR-32  
DPR-37

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**

Enclosed is the Surry Power Station Annual Radioactive Effluent Release Report for January 1, 2009 through December 31, 2009. The report, submitted pursuant to Surry Power Station Technical Specification 6.6.B.3, includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released during the 2009 calendar year, as outlined in Regulatory Guide 1.21, Revision 1, June 1974.

If you have any further questions, please contact Paul Harris at 757-365-2692.

Sincerely,



B. L. Stanley  
Director Safety & Licensing  
Surry Power Station

Attachment

Commitments made by this letter: None

cc: United States Nuclear Regulatory Commission  
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NRC Senior Resident Inspector  
Surry Power Station

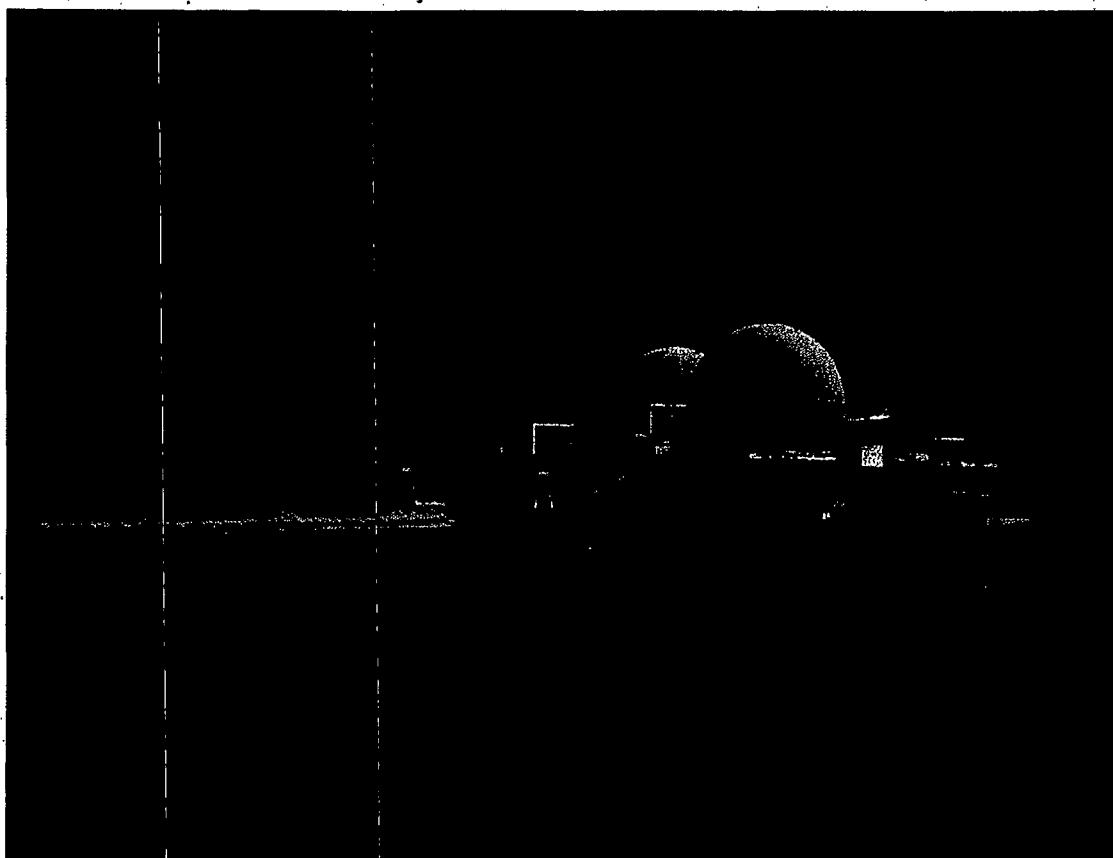
Serial No.: 10-218  
Docket Nos.: 50-280  
50-281

**Attachment 1**

**2009 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**

**SURRY POWER STATION UNITS 1 AND 2  
VIRGINIA ELECTRIC AND POWER COMPANY**

# Surry Power Station



## 2009 Annual Radioactive Effluent Release Report



**Dominion®**

**ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**  
**SURRY POWER STATION**

January 1, 2009 through December 31, 2009

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**ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**  
**FOR THE**  
**SURRY POWER STATION**

**January 1, 2009 through December 31, 2009**

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## **FORWARD**

This report is submitted as required by Appendix A to Operating License Nos. DPR-32 and DPR-37, Technical Specifications for Surry Power Station, Units 1 and 2, Virginia Electric and Power Company, Docket Nos. 50-280, 50-281, Section 6.6.B.3.

**EXECUTIVE SUMMARY**  
**ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**

The Annual Radioactive Effluent Release Report describes the radiological effluent control program conducted at Surry Power Station during the 2009 calendar year. This document summarizes the quantities of radioactive liquid and gaseous effluents and solid waste released from Surry Power Station in accordance with Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants", Revision 1, June 1974. The report also includes an assessment of radiation doses to the maximum exposed member of the public due to the radioactive liquid and gaseous effluents.

During this reporting period, there were no unplanned liquid or gaseous effluent releases as classified according to the criteria in the Offsite Dose Calculation Manual.

Based on the 2009 effluent release data, 10CFR50 Appendix I dose calculations were performed in accordance with the Offsite Dose Calculation Manual. The dose calculations are as follows:

1. The total body dose due to liquid effluents was 3.09E-04 mrem, which is 5.15E-03% of the 6 mrem dose limit. The critical organ doses due to liquid effluents, GI-LLI and Liver respectively, were 5.04E-04 mrem and 3.07E-04 mrem. These doses are 2.52E-03% and 1.54E-03% of the respective 20 mrem dose limit.
2. The air dose due to noble gases in gaseous effluents was 2.14E-04 mrad gamma, which is 1.07E-03% of the 20 mrad gamma dose limit, and 4.86E-04 mrad beta, which is 1.22E-03% of the 40 mrad beta dose limit.
3. The critical organ dose from gaseous effluents due to I-131, I-133, H-3, and particulates with half-lives greater than 8 days is 9.78E-02 mrem, which is 3.26E-01% of the 30 mrem dose limit.

There were no major changes to the radioactive liquid, gaseous or solid waste treatment systems during this reporting period.

There were no changes to VPAP-2103S, Offsite Dose Calculation Manual, during this reporting period.

In accordance with the Nuclear Energy Institute (NEI) Industry Ground Water Protection Initiative, analysis results of ground water monitoring locations not included in the Radiological Environmental Monitoring Program (REMP), will be included in this report. Ground water monitoring well sample results are provided in Attachment 8.

Based on the radioactivity measured and the dose calculations performed during this reporting period, the operation of Surry Power Station has resulted in negligible radiation dose consequences to the maximum exposed member of the public in unrestricted areas.

### **Purpose and Scope**

Attachment 1 includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste as outlined in Regulatory Guide 1.21, with data summarized on a quarterly or annual basis following the format of Tables 1, 2 and 3 of Appendix B, thereof. Attachment 2 of this report includes an assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site during 2009.

As required by Technical Specification 6.8.B, changes to the Offsite Dose Calculation Manual (ODCM) for the time period covered by this report are included in Attachment 3. Major changes to the radioactive liquid, gaseous and solid waste treatment systems are reported in Attachment 4, as required by the ODCM, Section 6.7.2. If changes are made to these systems, the report shall include information to support the reason for the change and a summary of the 10CFR50.59 evaluation. In lieu of reporting major changes in this report, major changes to the radioactive waste treatment systems may be submitted as part of the annual FSAR update.

As required by the ODCM, Sections 6.2.2 and 6.3.2, a list and explanation for the inoperability of radioactive liquid and/or gaseous effluent monitoring instrumentation is provided in Attachment 5 of this report. Additionally, a list of unplanned releases during the reporting period is included in Attachment 6.

Attachment 7 provides the typical lower limit of detection (LLD) capabilities of the radioactive effluent analysis instrumentation.

As required by the ODCM, Section 6.7.5, a summary of on-site radioactive spills or leaks that were communicated in accordance with the Industry Ground Water Protection Initiative reporting protocol, and sample analyses from ground water wells that are not part of the Radiological Environmental Monitoring Program are provided in Attachment 8.



## Discussion

The basis for the calculation of the percent of technical specification for the critical organ in Table 1A of Attachment 1 is the ODCM, Section 6.3.1, which requires that the dose rate for iodine-131, iodine-133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days shall be less than or equal to 1500 mrem/yr to the critical organ at or beyond the site boundary. The critical receptor is the teen via the inhalation pathway.

The basis for the calculation of the percent of technical specification for the total body and skin in Table 1A of Attachment 1 is the ODCM, Section 6.3.1, which requires that the dose rate for noble gases to areas at or beyond site boundary shall be less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin.

The basis for the calculation of the percent of technical specification in Table 2A of Attachment 1 is the ODCM, Section 6.2.1, which states that the concentration of radioactive material releases in liquid effluents to unrestricted areas shall not exceed ten times the concentrations specified in 10CFR20, 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 2.00E-04 microcuries/mL.

Percent of technical specification calculations are based on the total gaseous or liquid effluents released for the respective quarter.

The annual and quarterly doses, as reported in Attachment 2, were calculated according to the methodology presented in the ODCM. The beta and gamma air doses due to noble gases released from the site were calculated at the site boundary. The maximum exposed member of the public from the release of airborne iodine-131, iodine-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days, was a teen at the site boundary with the critical organ being the lung. The maximum exposed member of the public from radioactive materials in liquid effluents in unrestricted areas was an adult, exposed by either the invertebrate or fish pathway, with the critical organ typically being the gastrointestinal-lower large intestine. The total body dose was also determined for this individual.

Presented in Attachment 6 is a list of unplanned gaseous and liquid releases as required by the ODCM, Section 6.7.2.

The typical lower limit of detection (LLD) capabilities of the radioactive effluent analysis instrumentation are presented in Attachment 7. These LLD values are based upon conservative conditions (i.e., minimum sample volumes and maximum delay time prior to analysis). Actual LLD values may be lower. If a radioisotope was not detected when effluent samples were analyzed, then the activity of the radioisotope was reported as Not Detected (N/D) on Attachment 1 of this report. When all isotopes listed on Attachment 1 for a particular quarter and release mode are less than the lower limit of detection, then the totals for this period will be designated as Not Applicable (N/A).

### **Supplemental Information**

Section 6.6.1 of the ODCM requires the identification of the cause(s) for the unavailability of milk, or if required, leafy vegetation samples, and the identification for obtaining replacement samples. As milk was available for collection during this reporting period, leafy vegetation sampling was not required.

As required by the ODCM, Section 6.6.2, evaluation of the Land Use Census is made to determine if new sample location(s) must be added to the Radiological Environmental Monitoring Program. Evaluation of the Land Use Census conducted for this reporting period identified no change in sample locations for the Radiological Environmental Monitoring Program.

Included as Attachment 9, are corrections to the Annual Radioactive Effluent Release Reports submitted for 2006, 2007 and 2008. An error in the gaseous tritium concentration algorithm was discovered in 2009. This error, introduced coincident with the implementation of new analytical equipment in November of 2006, resulted in an underestimation of tritium concentration in gaseous effluents by 11%, for samples analyzed with the new equipment.

The 2007 and 2008 amended reports also include a revision to liquid effluent data. In 2009, an evaluation of an identified effluent source (sump) determined improved accountability practices were warranted. The sump became an effluent source in March of 2007. The revised liquid effluent data represents a minor increase in the release of fission products and tritium for 2007 and 2008; 1.3%, 0.0013% and 1.7%, 0.0032%, respectively.

The affected pages of the 2006, 2007 and 2008 reports are included in Attachment 9, in their entirety. Revision bars are located in the right hand margin of the affected pages to identify the specific revision.

**EFFLUENT RELEASE DATA**

**January 1, 2009 through December 31, 2009**

This attachment includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste as outlined in Regulatory Guide 1.21, Appendix B.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/09 TO 12/31/09  
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	5.72E-03	7.91E-01	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	7.36E-04	1.01E-01	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	2.35E-08	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	2.99E-09	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	N/D	1.19E-05	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	1.51E-06	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	6.21E+00	6.38E+00	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	7.98E-01	8.11E-01	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	4.05E-03	4.11E-03	
TOTAL BODY DOSE RATE	%	1.34E-05	1.20E-04	
SKIN DOSE RATE	%	4.32E-06	4.41E-05	

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/09 TO 12/31/09  
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	1.47E-03	5.48E-01	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.85E-04	6.90E-02	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	N/D	4.82E-05	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	6.06E-06	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	8.60E+00	1.93E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.08E+00	2.42E+00	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	5.48E-03	1.23E-02	
TOTAL BODY DOSE RATE	%	3.36E-07	1.59E-05	
SKIN DOSE RATE	%	1.22E-07	5.36E-06	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/09 TO 12/31/09  
GASEOUS EFFLUENTS-MIXED MODE RELEASES

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	1.31E-03
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	8.06E-04
Xe-133	Ci	N/D	N/D	7.66E-05	5.12E-01
Xe-135	Ci	N/D	N/D	N/D	6.13E-02
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	4.58E-04
Xe-133m	Ci	N/D	N/D	N/D	7.62E-03
Ar-41	Ci	N/D	N/D	N/D	3.07E-03
TOTAL FOR PERIOD	Ci	N/A	N/A	7.66E-05	5.87E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	1.21E-08	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	1.21E-08	N/A	N/A

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/09 TO 12/31/09**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	2.92E-04
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	1.59E-04
Xe-133	Ci	N/D	N/D	1.35E-03	5.16E-01
Xe-135	Ci	N/D	N/D	N/D	1.17E-02
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	2.93E-03
Xe-133m	Ci	N/D	N/D	N/D	4.95E-03
Ar-41	Ci	N/D	N/D	N/D	1.84E-03
TOTAL FOR PERIOD	Ci	N/A	N/A	1.35E-03	5.38E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	4.40E-09	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	4.40E-09	N/A	N/A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/09 TO 12/31/09**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	3.04E-05	N/D	2.70E-03	1.99E-01
Xe-135	Ci	2.31E-04	1.71E-04	2.32E-03	3.39E-03
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	1.23E-04
Ar-41	Ci	3.70E-04	1.31E-03	N/D	N/D
TOTAL FOR PERIOD	Ci	6.31E-04	1.48E-03	5.02E-03	2.03E-01
2. IODINES					
I-131	Ci	N/D	2.35E-08	N/D	N/D
I-132	Ci	N/D	2.96E-05	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	2.96E-05	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	6.50E-09
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	1.19E-05	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	1.19E-05	N/A	6.50E-09



**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/09 TO 12/31/09**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	7.92E-03
Xe-135	Ci	1.21E-04	1.00E-03	N/D	1.11E-03
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	3.63E-04	N/D	N/D
TOTAL FOR PERIOD	Ci	1.21E-04	1.36E-03	N/A	9.03E-03
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	9.90E-06	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	3.83E-05	N/D	1.54E-08
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	4.82E-05	N/A	1.54E-08

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/09 TO 12/31/09  
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	4.96E-03	4.59E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	7.65E-12	6.78E-12	
3. PERCENT OF APPLICABLE LIMIT	%	2.13E-05	2.41E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	4.97E+02	2.52E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	7.68E-07	3.73E-07	
3. PERCENT OF APPLICABLE LIMIT	%	7.68E-03	3.73E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	2.12E-05	6.50E-05	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	3.27E-14	9.61E-14	
3. PERCENT OF APPLICABLE LIMIT	%	1.63E-08	4.81E-08	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	3.23E+07	4.98E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.48E+11	6.77E+11	3.00E+00

TABLE 2A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/09 TO 12/31/09**  
**LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	6.46E-03	6.02E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	8.31E-12	9.91E-12	
3. PERCENT OF APPLICABLE LIMIT	%	2.04E-05	2.67E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	3.01E+02	3.39E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	3.87E-07	5.58E-07	
3. PERCENT OF APPLICABLE LIMIT	%	3.87E-03	5.58E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	6.14E-06	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	N/A	1.01E-14	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	5.05E-09	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	5.61E+07	4.75E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	7.78E+11	6.08E+11	3.00E+00

TABLE 2B

## EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

PERIOD: 1/1/09 TO 12/31/09

## LIQUID EFFLUENTS

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	5.74E-04	7.62E-04	5.23E-08	3.40E-04
I-131	Ci	N/D	N/D	1.32E-06	8.89E-06
Co-58	Ci	N/D	N/D	1.93E-03	1.02E-03
Co-60	Ci	N/D	N/D	2.10E-03	1.38E-03
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	9.75E-05	4.77E-05
Cr-51	Ci	N/D	N/D	N/D	7.67E-04
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	5.88E-06	6.83E-06
Sb-125	Ci	N/D	N/D	2.08E-04	2.59E-04
Co-57	Ci	N/D	N/D	4.79E-05	2.52E-06
TOTAL FOR PERIOD	Ci	5.74E-04	7.62E-04	4.39E-03	3.83E-03
Xe-133	Ci	N/D	N/D	2.12E-05	6.50E-05
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	2.12E-05	6.50E-05

TABLE 2B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/09 TO 12/31/09**  
**LIQUID EFFLUENTS**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	8.38E-04	6.29E-04	2.00E-05	2.02E-04
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	1.43E-03	1.61E-03
Co-60	Ci	N/D	N/D	1.73E-03	2.05E-03
Fe-59	Ci	N/D	N/D	N/D	3.22E-06
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	6.88E-05	7.53E-05
Cr-51	Ci	N/D	N/D	N/D	8.07E-04
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	8.73E-06
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	3.78E-06
Sb-125	Ci	N/D	N/D	2.37E-03	6.24E-04
Co-57	Ci	N/D	N/D	4.77E-06	1.23E-05
TOTAL FOR PERIOD		Ci	8.38E-04	6.29E-04	5.62E-03
					5.40E-03
Xe-133	Ci	N/D	N/D	N/D	6.14E-06
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD		Ci	N/A	N/A	N/A
					6.14E-06

TABLE 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

PERIOD: 1/1/09 - 12/31/09

SURRY POWER STATION

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste		12 month Period		Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup> Ci	7.14E+01 1.32E+01	Note 1	1.00E+01 3.00E+01
b. Dry compressible waste, contaminated equip., etc.	m <sup>3</sup> Ci	6.47E+02 1.18E+00	Note 2	1.00E+01 3.00E+01
c. Irradiated components, control rods, etc.	m <sup>3</sup> Ci	0.00E+00 0.00E+00		1.00E+01 3.00E+01
d. Other (Waste oil)	m <sup>3</sup> Ci	8.90E+00 3.76E-05	Note 3	1.00E+01 3.00E+01

2. Estimate of major nuclide composition (by type of waste)

a. Ni-63	%	3.03E+01
H-3	%	2.78E+01
Co-60	%	2.29E+01
Fe-55	%	6.69E+00
Cs-137	%	5.00E+00
Co-58	%	4.10E+00
Sb-125	%	1.25E+00
Mn-54	%	1.05E+00
b. Cs-137	%	4.47E+01
Co-58	%	1.91E+01
Co-60	%	1.23E+01
Fe-55	%	9.22E+00
Ni-63	%	5.49E+00
Cr-51	%	3.18E+00
H-3	%	2.80E+00
c.	%	
d. H-3	%	4.58E+01
Ni-63	%	2.68E+01
Co-60	%	2.42E+01
Cs-137	%	2.22E+00

TABLE 3

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**  
**PERIOD: 1/1/09 - 12/31/09**  
**CONTINUED**

**SURRY POWER STATION**

**A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)**

**3. Solid Waste Disposition**

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
3	Truck	Clive, UT (EnergySolutions)
16	Truck	Oak Ridge, TN (EnergySolutions)

**B. IRRADIATED FUEL SHIPMENT (Disposition)**

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0		

NOTE 1: Some of this waste was shipped to licensed waste processors for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 2.33E+00 m<sup>3</sup>.

NOTE 2: Some DAW was shipped to licensed waste processors for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 2.32E+02 m<sup>3</sup>.

NOTE 3: This waste was shipped to a licensed waste processor for processing and/or volume reduction. Therefore, this volume is not representative of the actual volume buried. The total volume buried for this reporting period is 8.90E+00 m<sup>3</sup>.

### ANNUAL AND QUARTERLY DOSES

An assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, along with an annual total of each effluent pathway is made pursuant to the ODCM, Section 6.7.2, requirement.

2009	LIQUID			GASEOUS		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)	Gamma (mrad)	Beta (mrad)	Lung (mrem)
1st Quarter	1.06E-04	1.61E-04	1.04E-04	1.77E-05	1.97E-05	1.50E-02
2nd Quarter	6.01E-05	9.01E-05	6.08E-05	1.74E-04	4.31E-04	1.54E-02
3rd Quarter	5.82E-05	9.51E-05	5.77E-05	4.46E-07	5.81E-07	2.07E-02
4th Quarter	8.50E-05	1.58E-04	8.41E-05	2.21E-05	3.49E-05	4.67E-02
Annual	3.09E-04	5.04E-04	3.07E-04	2.14E-04	4.86E-04	9.78E-02



**REVISIONS TO OFFSITE DOSE CALCULATION MANUAL (ODCM)**

As required by Technical Specification 6.8.B, revisions to the ODCM, effective for the time period covered by this report, are included with this attachment. There were no revisions to the ODCM implemented during this reporting period.

**MAJOR CHANGES TO RADIOACTIVE LIQUID,  
GASEOUS AND SOLID WASTE TREATMENT SYSTEMS**

There were no major changes to the radioactive liquid, gaseous or solid waste treatment systems for this reporting period.

**INOPERABILITY OF RADIOACTIVE LIQUID AND GASEOUS  
EFFLUENT MONITORING INSTRUMENTATION**

The Annual Radioactive Effluent Release Report shall explain why monitors required by the ODCM Attachments 1 and 5, which were determined to be inoperable, were not returned to operable status within 30 days. None of the above referenced monitors were inoperable greater than 30 days during this reporting period.

**UNPLANNED RELEASES**

There were no unplanned liquid or unplanned gaseous releases during this reporting period.

**LOWER LIMIT OF DETECTION (LLD) FOR EFFLUENT SAMPLE ANALYSIS**

<u>GASEOUS:</u>	<u>Isotope</u>	<u>Required LLD</u>	<u>Typical LLD</u>
	Kr-87	1.00E-04	2.01E-08 - 2.55E-06
	Kr-88	1.00E-04	2.17E-08 - 3.04E-06
	Xe-133	1.00E-04	8.65E-09 - 2.07E-06
	Xe-133m	1.00E-04	3.73E-08 - 8.08E-06
	Xe-135	1.00E-04	4.92E-09 - 9.12E-07
	Xe-135m	1.00E-04	2.06E-07 - 4.57E-06
	Xe-138	1.00E-04	7.46E-07 - 9.11E-06
	I-131	1.00E-12	5.85E-14 - 1.01E-13
	I-133	1.00E-10	8.72E-13 - 2.59E-12
	Sr-89	1.00E-11	1.02E-15 - 2.77E-12
	Sr-90	1.00E-11	6.80E-16 - 3.28E-13
	Cs-134	1.00E-11	2.24E-14 - 2.77E-13
	Cs-137	1.00E-11	6.23E-14 - 6.61E-13
	Mn-54	1.00E-11	3.46E-14 - 4.76E-13
	Fe-59	1.00E-11	4.09E-14 - 9.74E-13
	Co-58	1.00E-11	2.93E-14 - 5.45E-13
	Co-60	1.00E-11	3.90E-14 - 6.60E-13
	Zn-65	1.00E-11	7.87E-14 - 9.91E-13
	Mo-99	1.00E-11	4.03E-13 - 3.66E-12
	Ce-141	1.00E-11	3.95E-14 - 3.98E-13
	Ce-144	1.00E-11	1.59E-13 - 1.73E-12
	Alpha	1.00E-11	1.70E-14 - 1.86E-14
	Tritium	1.00E-06	7.61E-08 - 8.84E-08
 <u>LIQUID</u>			
	Sr-89	5.00E-08	6.32E-09 - 4.29E-08
	Sr-90	5.00E-08	3.12E-09 - 2.53E-08
	Cs-134	5.00E-07	5.36E-09 - 1.46E-08
	Cs-137	5.00E-07	1.31E-08 - 1.93E-08
	I-131	1.00E-06	8.73E-09 - 2.08E-08
	Co-58	5.00E-07	6.51E-09 - 1.62E-08
	Co-60	5.00E-07	6.56E-09 - 2.90E-08
	Fe-59	5.00E-07	8.29E-09 - 2.92E-08
	Zn-65	5.00E-07	1.60E-08 - 3.90E-08
	Mn-54	5.00E-07	6.19E-09 - 1.50E-08
	Mo-99	5.00E-07	7.02E-08 - 3.12E-07
	Ce-141	5.00E-07	1.08E-08 - 1.76E-08
	Ce-144	5.00E-07	4.48E-08 - 7.96E-08
	Fe-55	1.00E-06	4.26E-07 - 9.80E-07
	Alpha	1.00E-07	2.91E-08 - 2.91E-08
	Tritium	1.00E-05	1.89E-06 - 2.20E-06
	Xe-133	1.00E-05	1.36E-08 - 3.05E-08
	Xe-135	1.00E-05	7.03E-09 - 1.07E-08
	Xe-133m	1.00E-05	5.35E-08 - 9.72E-08
	Xe-135m	1.00E-05	2.81E-07 - 7.20E-07
	Xe-138	1.00E-05	1.09E-06 - 2.02E-06
	Kr-87	1.00E-05	2.74E-08 - 4.64E-08
	Kr-88	1.00E-05	3.24E-08 - 4.75E-08

**INDUSTRY GROUND WATER PROTECTION INITIATIVE**

The Annual Radioactive Effluent Release Report shall include a summary of on-site radioactive spills or leaks that were communicated in accordance with the Initiative reporting protocol, and also include sample analyses from ground water monitoring wells that are not part of the Radiological Environmental Monitoring Program (REMP). There was one on-site radioactive leak communicated in accordance with the Initiative in 2009.

On 3/3/2009, a relief valve on a primary grade water storage tank heater lifted, failed to reseal and leaked approximately 450 gallons of water to the soil around the tank. The valve lifted due to a water hammer and failed to reseal due to a dislodged o-ring retainer. The design of the relief valve has been modified to direct relief valve discharge back to the tank. The leak was voluntarily reported to County and State officials and to the Nuclear Regulatory Commission. There is no indication that any material has migrated off-site undetected. Samples of monitoring wells on the perimeter of the site and on-site drinking water wells have shown no indication of contamination. The following table summarizes the reported leak analysis.

Isotope	Concentration
Tritium	4,810
Cesium-137	25.1

Concentration is picoCuries/Liter, pCi/L

The tritium analytical equipment was not in service when this leak occurred. Because the cesium was confirmed in the contents of the tank, the voluntary report was made with a historical tritium concentration in order to meet the "end of the next business day" reporting requirement. A sample of the tank was sent to North Anna Power Station for tritium analysis. Tritium was not detected in the sample analysis performed by North Anna Power Station.

## INDUSTRY GROUND WATER PROTECTION INITIATIVE

The following is a summary of 2009 sample analyses of ground water monitoring wells that are not a part of the REMP. Analyses are performed by an independent laboratory.

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter
1-PL-Piez-33	2/4/09	<471	ND	NA	NA	NA
1-PL-Piez-34	2/4/09	<468	ND	NA	NA	NA
1-PL-Piez-35	2/4/09	<472	NA	NA	NA	NA
1-PL-Piez-36	2/4/09	<471	NA	NA	NA	NA
1-PL-Piez-37	2/4/09	<471	NA	NA	NA	NA
1-PL-Piez-38	2/5/09	<471	NA	NA	NA	NA
1-PL-Piez-39	2/5/09	<471	NA	NA	NA	NA
1-PL-Piez-40	2/5/09	<471	ND	NA	NA	NA
1-PL-Piez-41	2/5/09	<473	ND	NA	NA	NA
1-PL-Piez-20	2/9/09	<464	ND	NA	NA	NA
1-PL-Piez-22	2/9/09	<473	ND	NA	NA	NA
1-PL-Piez-24	2/9/09	<472	ND	NA	NA	NA
1-PL-Piez-28	2/9/09	<463	ND	NA	NA	NA
1-PL-Piez-25	2/10/09	<466	ND	NA	NA	NA
1-PL-Piez-04	2/10/09	<470	ND	NA	NA	NA
1-PL-Piez-27	2/10/09	<470	ND	NA	NA	NA
1-PL-Piez-08	2/10/09	<465	ND	NA	NA	NA
1-PL-Piez-07	2/11/09	<499	ND	NA	NA	NA
1-PL-Piez-09	2/11/09	<490	NA	NA	NA	NA
1-PL-Piez-42	2/11/09	<499	ND	NA	NA	NA
1-PL-Piez-03	2/11/09	<503	NA	NA	NA	NA
1-PL-Piez-23	2/11/09	<500	ND	NA	NA	NA
1-PL-Piez-05	2/26/09	16,200	ND	<74.9	<26.1	<0.739
1-PL-Piez-06	2/26/09	2,070	ND	<69.7	<25.2	<0.958
1-PL-Piez-29	2/26/09	9,210	ND	<71.7	<25.3	<0.641
1-PL-Piez-07	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-27	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-33	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-34	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-41	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-42	5/11/09	NP	ND	NA	NA	NA
1-PL-Piez-04	5/12/09	NP	ND	NA	NA	NA
1-PL-Piez-05	5/12/09	16,400	ND	NA	NA	NA
1-PL-Piez-06	5/12/09	2,620	ND	NA	NA	NA
1-PL-Piez-29	5/12/09	8,950	ND	NA	NA	NA

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.

NA = Analysis not required. NP = Analysis not performed. Sample volume consumed prior to tritium analysis. Corrective actions implemented by vendor laboratory to prevent recurrence.

# INDUSTRY GROUND WATER PROTECTION INITIATIVE

The following is a summary of 2009 sample analyses of ground water monitoring wells that are not a part of the REMP. Analyses are performed by an independent laboratory.

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter
1-PL-Piez-04	8/17/09	<1500	ND	NA	NA	NA
1-PL-Piez-07	8/17/09	<1530	ND	NA	NA	NA
1-PL-Piez-08	8/17/09	<1550	ND	NA	NA	NA
1-PL-Piez-24	8/17/09	<1570	ND	NA	NA	NA
1-PL-Piez-25	8/17/09	<1550	ND	NA	NA	NA
1-PL-Piez-27	8/17/09	<1520	ND	NA	NA	NA
1-PL-Piez-33	8/17/09	<706	ND	NA	NA	NA
1-PL-Piez-34	8/17/09	<701	ND	NA	NA	NA
1-PL-Piez-40	8/17/09	<696	ND	NA	NA	NA
1-PL-Piez-41	8/17/09	<703	ND	NA	NA	NA
1-PL-Piez-42	8/17/09	<692	ND	NA	NA	NA
1-PL-Piez-05	8/18/09	13,600	ND	NA	NA	NA
1-PL-Piez-06	8/18/09	1,680	ND	NA	NA	NA
1-PL-Piez-29	8/18/09	9,710	ND	NA	NA	NA
1-PL-Piez-04	12/15/09	<1330	ND	NA	NA	NA
1-PL-Piez-05	12/15/09	14,300	ND	NA	NA	NA
1-PL-Piez-07	12/15/09	<1330	ND	NA	NA	NA
1-PL-Piez-27	12/15/09	<1320	ND	NA	NA	NA
1-PL-Piez-33	12/15/09	<1330	ND	NA	NA	NA
1-PL-Piez-34	12/15/09	<1330	ND	NA	NA	NA
1-PL-Piez-06	12/16/09	2,490	ND	NA	NA	NA
1-PL-Piez-29	12/16/09	9,700	ND	NA	NA	NA
1-PL-Piez-41	12/16/09	<1320	ND	NA	NA	NA
1-PL-Piez-42	12/16/09	<1320	ND	NA	NA	NA

ND = No non-natural gamma emitting nuclides detected when analyzed to REMP LLDs.

NA = Analysis not required.



## **ERRATA/CORRECTIONS TO PREVIOUS REPORTS**

The following pages contain revisions to the previously submitted Annual Radioactive Effluent Release Reports (ARERR) for 2006, 2007 and 2008.

An error in the gaseous tritium concentration algorithm was discovered in 2009. The algorithm did not contain the 0.9 collection efficiency factor for the sampling method in use. This error, introduced coincident with the implementation of new analytical equipment in November of 2006, resulted in an underestimation of tritium concentration in gaseous effluents by 11%, for samples analyzed using this equipment. The revised effluent data for 2006 represents an increase of 0.2 curies gaseous tritium released and 4.00E-04 mrem to the critical organ of the maximum exposed member of the public. The revised effluent data for 2007 represents an increase of 7.0 curies gaseous tritium released and 1.70E-02 mrem to the critical organ of the maximum exposed member of the public. The revised effluent data for 2008 represents an increase of 5.3 curies gaseous tritium released and 1.30E-02 mrem to the critical organ of the maximum exposed member of the public. The revisions are indicated by change bars in the right hand column of Table 1A, where applicable, and Attachment 2 for 2006, 2007 and 2008.

The 2007 and 2008 amended reports also include a revision to liquid effluent data. In 2009, an evaluation of an identified effluent source (sump) determined improved accountability practices were warranted. The sump became an effluent source in March of 2007. The revised effluent data for 2007 represents a minor increase in the release of fission products and tritium, 3.65E-04 Ci (1.3%) and 1.48E-02 Ci (0.0013%), respectively. The resulting increase in member of the public dose is 2.00E-06 mrem (0.7%) total body and 3.00E-06 mrem (1.0%) critical organ, liver. The revised effluent data for 2008 also represents a minor increase in the release of fission products and tritium, 4.76E-04 Ci (1.7%) and 1.93E-02 Ci (0.0032%), respectively. The resulting increase in member of the public dose is 2.00E-06 mrem (1.3%) total body and 4.00E-06 mrem (2.7%) critical organ, liver. The revisions are indicated by change bars in the right hand columns of Attachment 1, Table 2A and Table 2B, and Attachment 2 for 2007 and 2008.

Pages 11 of 12 and 12 of 12 to Attachment 1 are not included in the amended reports for 2006, 2007 and 2008. These pages typically include information about solid waste and irradiated fuel shipments. As no revisions have been made to this data, pages 11 and 12 to Attachment 1 for 2006, 2007 and 2008 have not been included.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/06 TO 12/31/06  
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
A. FISSION & ACTIVATION GASES				
1. TOTAL RELEASE	Ci	6.11E-02	1.80E+00	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	7.86E-03	2.29E-01	
B. IODINE				
1. TOTAL I-131	Ci	N/D	2.23E-07	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	2.84E-08	
C. PARTICULATE				
1. HALF-LIFE >8 DAYS	Ci	1.97E-08	8.04E-06	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.54E-09	1.02E-06	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	Ci	8.59E+00	1.55E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.11E+00	1.97E+00	
PERCENTAGE OF T.S. LIMITS				
CRITICAL ORGAN DOSE RATE	%	5.61E-03	1.00E-02	
TOTAL BODY DOSE RATE	%	9.08E-06	7.55E-04	
SKIN DOSE RATE	%	2.64E-06	2.72E-04	

TABLE 1A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	3.42E-01	2.29E-01	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	4.30E-02	2.89E-02	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	1.55E-08	5.97E-06	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.95E-09	7.51E-07	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.53E+01	1.70E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.92E+00	2.13E+00	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	9.73E-03	1.08E-02	
TOTAL BODY DOSE RATE	%	5.05E-06	1.84E-05	
SKIN DOSE RATE	%	1.87E-06	6.24E-06	

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	5.74E-04
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	6.86E-02	5.94E-02	1.13E+00
Xe-135	Ci	N/D	N/D	N/D	4.10E-02
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	1.09E-02
Ar-41	Ci	N/D	N/D	N/D	2.55E-04
TOTAL FOR PERIOD	Ci	N/A	6.86E-02	5.94E-02	1.19E+00
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.97E-08	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	6.71E-10	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	1.97E-08	6.71E-10	N/A	N/A

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	3.40E-01	2.14E-01
Xe-135	Ci	N/D	N/D	N/D	7.17E-05
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	8.51E-05
Xe-133m	Ci	N/D	N/D	N/D	9.69E-05
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	3.40E-01	2.15E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.55E-08	5.66E-09	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	4.84E-09	N/D	N/D
Co-60	Ci	N/D	6.78E-09	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	1.55E-08	1.73E-08	N/A	N/A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	3.46E-01
Xe-135	Ci	5.73E-04	2.64E-04	6.41E-04	1.89E-01
Xe-135m	Ci	1.79E-04	4.57E-05	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	1.98E-03
Ar-41	Ci	3.42E-04	3.20E-04	N/D	5.00E-03
TOTAL FOR PERIOD	Ci	1.09E-03	6.29E-04	6.41E-04	5.41E-01
2. IODINES					
I-131	Ci	N/D	2.23E-07	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	2.23E-07	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	2.25E-06
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	2.59E-06
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	7.63E-07	N/D	2.43E-06
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	7.63E-07	N/A	7.27E-06

TABLE 1C

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	1.21E-02
Xe-135	Ci	2.95E-04	1.10E-03	1.20E-03	1.11E-03
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	3.65E-04	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	1.16E-04	N/D	N/D
TOTAL FOR PERIOD	Ci	2.95E-04	1.58E-03	1.20E-03	1.32E-02
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	1.72E-06	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	4.23E-06	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	5.96E-06	N/A	N/A

TABLE 2A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	1.51E-02	4.10E-02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	2.24E-11	6.67E-11	
3. PERCENT OF APPLICABLE LIMIT	%	3.97E-05	3.92E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.87E+02	4.21E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	2.76E-07	6.85E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.76E-03	6.85E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	5.40E+07	4.52E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.77E+11	6.14E+11	3.00E+00



TABLE 2A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	2.50E-02	3.15E-02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	3.20E-11	5.36E-11	
3. PERCENT OF APPLICABLE LIMIT	%	2.16E-05	5.08E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.05E+02	3.01E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	1.34E-07	5.13E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.34E-03	5.13E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	4.68E+07	5.93E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	7.81E+11	5.87E+11	3.00E+00

TABLE 2B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/06 TO 12/31/06**  
**LIQUID EFFLUENTS**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	4.24E-04	6.36E-04	1.32E-03	2.94E-04
I-131	Ci	N/D	N/D	N/D	1.36E-04
Co-58	Ci	N/D	N/D	5.88E-03	1.15E-02
Co-60	Ci	1.30E-05	N/D	1.32E-03	9.45E-04
Fe-59	Ci	N/D	N/D	N/D	6.06E-06
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	2.83E-03	1.21E-04
Cr-51	Ci	N/D	N/D	N/D	1.67E-02
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	3.71E-05
Mo-99	Ci	N/D	N/D	N/D	2.42E-05
Tc-99m	Ci	N/D	N/D	N/D	1.13E-04
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	5.42E-04
Sb-125	Ci	N/D	N/D	3.28E-03	9.94E-03
Co-57	Ci	N/D	N/D	6.43E-05	7.50E-06
I-133	Ci	N/D	N/D	N/D	7.04E-06
<b>TOTAL FOR PERIOD</b>	<b>Ci</b>	<b>4.37E-04</b>	<b>6.36E-04</b>	<b>1.47E-02</b>	<b>4.04E-02</b>
 Xe-133	 Ci	 N/D	 N/D	 N/D	 N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
<b>TOTAL FOR PERIOD</b>	<b>Ci</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/06 TO 12/31/06  
LIQUID EFFLUENTS

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	3.20E-04	4.24E-04	6.72E-05	2.28E-04
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	1.30E-02	2.45E-02
Co-60	Ci	N/D	N/D	8.95E-04	3.00E-03
Fe-59	Ci	N/D	N/D	N/D	4.53E-06
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	6.44E-04	2.45E-03
Cr-51	Ci	N/D	N/D	2.22E-04	6.44E-05
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	2.15E-05
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	8.17E-06	N/D
Sb-125	Ci	N/D	N/D	9.78E-03	6.08E-04
Co-57	Ci	N/D	N/D	3.44E-05	2.02E-04
I-133	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	3.20E-04	4.24E-04	2.46E-02	3.11E-02
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

### ANNUAL AND QUARTERLY DOSES

An assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, along with an annual total of each effluent pathway is made pursuant to the ODCM, Section 6.7.2, requirement.

2006	LIQUID			GASEOUS		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)	Gamma (mrad)	Beta (mrad)	Lung (mrem)
1st Quarter	5.43E-05	1.56E-04	6.51E-05	1.19E-05	8.80E-06	2.08E-02
2nd Quarter	1.08E-04	3.08E-04	1.04E-04	1.02E-03	1.63E-03	3.75E-02
3rd Quarter	3.11E-05	1.43E-04	2.73E-05	6.88E-06	1.12E-05	3.69E-02
4th Quarter	1.14E-04	4.66E-04	1.08E-04	2.55E-05	4.12E-05	4.10E-02
Annual	3.07E-04	1.07E-03	3.04E-04	1.07E-03	1.69E-03	1.36E-01

TABLE 1A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	4.86E-01	9.41E-03	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	6.26E-02	1.20E-03	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	2.15E-06	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.77E-02	N/A	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.42E+01	8.87E+00	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.83E+00	1.13E+00	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	9.32E-03	5.72E-03	
TOTAL BODY DOSE RATE	%	4.81E-06	2.58E-05	
SKIN DOSE RATE	%	1.80E-06	8.21E-06	

TABLE 1A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	1.95E-02	1.46E+00	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.45E-03	1.83E-01	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	2.02E+01	2.67E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.54E+00	3.36E+00	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	1.29E-02	1.71E-02	
TOTAL BODY DOSE RATE	%	2.03E-04	5.01E-04	
SKIN DOSE RATE	%	5.09E-05	1.78E-04	

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	4.75E-01	1.33E-04
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	7.77E-03	N/D
Xe-133m	Ci	N/D	N/D	1.93E-03	N/D
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	4.85E-01	1.33E-04
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.65E-08	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	4.14E-09	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	2.06E-08	N/A	N/A	N/A

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	8.67E-06
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	7.11E-04	7.12E-01
Xe-135	Ci	N/D	N/D	3.12E-04	1.31E-02
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	9.52E-03
Xe-133m	Ci	N/D	N/D	N/D	5.68E-03
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	1.02E-03	7.40E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A



TABLE 1C

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	1.03E-05	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	2.76E-05	2.66E-05	N/D	3.41E-03
Xe-135	Ci	2.94E-04	5.08E-04	9.39E-04	4.53E-03
Xe-135m	Ci	N/D	4.25E-05	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	7.47E-04	N/D	N/D
TOTAL FOR PERIOD	Ci	3.22E-04	1.33E-03	9.39E-04	7.94E-03
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	2.13E-06	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	2.13E-06	N/A	N/A	N/A

TABLE 1C

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/07 TO 12/31/07**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	1.76E-05	N/D	N/D	6.75E-01
Xe-135	Ci	4.06E-04	2.16E-04	3.59E-03	3.14E-02
Xe-135m	Ci	N/D	1.22E-05	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	1.62E-04
Ar-41	Ci	1.43E-03	1.83E-03	1.30E-02	6.74E-03
TOTAL FOR PERIOD	Ci	1.85E-03	2.06E-03	1.66E-02	7.13E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/07 TO 12/31/07  
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	1.04E-02	2.62E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	1.58E-11	3.81E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.60E-05	1.40E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.25E+02	1.47E+01	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	1.89E-07	2.13E-08	
3. PERCENT OF APPLICABLE LIMIT	%	1.89E-03	2.13E-04	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	3.27E+07	3.22E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.60E+11	6.88E+11	3.00E+00

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/07 TO 12/31/07  
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	3.76E-03	1.15E-02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	4.90E-12	2.05E-11	
3. PERCENT OF APPLICABLE LIMIT	%	1.83E-05	5.58E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	4.78E+02	5.60E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	6.23E-07	9.96E-07	
3. PERCENT OF APPLICABLE LIMIT	%	6.23E-03	9.96E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	4.00E-05	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	μCi/mL	N/A	7.11E-14	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	3.56E-08	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	4.64E+07	4.90E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	7.68E+11	5.62E+11	3.00E+00

TABLE 2B

## EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

PERIOD: 1/1/07 TO 12/31/07

## LIQUID EFFLUENTS

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.66E-04	6.75E-04	1.75E-06	3.00E-05
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	6.16E-03	9.74E-04
Co-60	Ci	N/D	N/D	1.49E-03	5.93E-04
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	9.61E-04	3.22E-04
Cr-51	Ci	N/D	N/D	N/D	N/D
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	N/D
Sb-125	Ci	N/D	N/D	1.58E-03	N/D
Co-57	Ci	N/D	N/D	8.46E-05	2.48E-05
TOTAL FOR PERIOD	Ci	1.66E-04	6.75E-04	1.03E-02	1.94E-03
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/07 TO 12/31/07  
LIQUID EFFLUENTS

SURRY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	8.10E-04	5.39E-04	8.19E-05	1.20E-03
I-131	Ci	N/D	N/D	N/D	7.47E-06
Co-58	Ci	N/D	N/D	9.77E-04	2.72E-03
Co-60	Ci	N/D	N/D	1.33E-03	3.61E-03
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	5.14E-04	1.04E-03
Cr-51	Ci	N/D	N/D	N/D	1.95E-03
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	1.71E-05
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	6.09E-06
Sb-125	Ci	N/D	N/D	N/D	3.31E-04
Co-57	Ci	N/D	N/D	4.64E-05	9.53E-05
<b>TOTAL FOR PERIOD</b>	Ci	8.10E-04	5.39E-04	2.95E-03	1.10E-02
Xe-133	Ci	N/D	N/D	N/D	4.00E-05
Xe-135	Ci	N/D	N/D	N/D	N/D
<b>TOTAL FOR PERIOD</b>	Ci	N/A	N/A	N/A	4.00E-05

### ANNUAL AND QUARTERLY DOSES

An assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, along with an annual total of each effluent pathway is made pursuant to the ODCM, Section 6.7.2, requirement.

2007	LIQUID			GASEOUS		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)	Gamma (mrad)	Beta (mrad)	Lung (mrem)
1st Quarter	3.37E-05	1.18E-04	3.26E-05	6.51E-06	1.18E-05	3.44E-02
2nd Quarter	8.92E-06	2.84E-05	1.07E-05	3.42E-05	3.52E-05	2.14E-02
3rd Quarter	8.67E-05	1.17E-04	8.85E-05	2.70E-04	1.09E-04	4.88E-02
4th Quarter	1.59E-04	3.22E-04	1.62E-04	7.23E-04	1.56E-03	6.46E-02
Annual	2.88E-04	5.85E-04	2.94E-04	1.03E-03	1.72E-03	1.69E-01

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/08 TO 12/31/08  
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	1.74E-03	2.53E-01	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.21E-04	3.21E-02	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	2.54E-07	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	3.23E-08	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	1.49E-07	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.89E-08	N/A	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.87E+01	1.41E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	2.38E+00	1.79E+00	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	1.21E-02	9.09E-03	
TOTAL BODY DOSE RATE	%	6.29E-06	5.13E-05	
SKIN DOSE RATE	%	2.02E-06	1.57E-05	



TABLE 1A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION &amp; ACTIVATION GASES</b>				
1. TOTAL RELEASE	Ci	8.15E-01	1.73E-02	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.03E-01	2.17E-03	
<b>B. IODINE</b>				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	N/A	
<b>C. PARTICULATE</b>				
1. HALF-LIFE >8 DAYS	Ci	N/D	4.74E-06	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	N/A	5.97E-07	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.22E+01	7.47E+00	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	μCi/sec	1.54E+00	9.40E-01	
<b>PERCENTAGE OF T.S. LIMITS</b>				
CRITICAL ORGAN DOSE RATE	%	7.83E-03	4.79E-03	
TOTAL BODY DOSE RATE	%	2.46E-05	2.00E-04	
SKIN DOSE RATE	%	2.75E-04	5.02E-05	

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	5.26E-04
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	3.75E-04
Xe-133	Ci	N/D	7.51E-02	1.18E-04	1.17E-01
Xe-135	Ci	N/D	N/D	N/D	2.14E-02
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	1.43E-03
Ar-41	Ci	N/D	N/D	N/D	4.16E-03
TOTAL FOR PERIOD	Ci	N/A	7.51E-02	1.18E-04	1.45E-01
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

TABLE 1B

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**GASEOUS EFFLUENTS-MIXED MODE RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	1.32E-02	9.64E-04
Xe-135	Ci	N/D	N/D	N/D	N/D
Xe-135m	Ci	N/D	N/D	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	1.32E-02	9.64E-04
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	N/D	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	2.30E-02
Xe-135	Ci	2.50E-04	3.86E-03	1.20E-03	1.23E-03
Xe-135m	Ci	N/D	4.39E-03	N/D	N/D
Xe-138	Ci	N/D	N/D	N/D	N/D
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	1.67E-04	3.37E-04	N/D	N/D
TOTAL FOR PERIOD	Ci	4.17E-04	8.59E-03	1.20E-03	2.42E-02
2. IODINES					
I-131	Ci	2.54E-07	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	2.54E-07	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	1.49E-07	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	1.49E-07	N/A	N/A	N/A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**GASEOUS EFFLUENTS-GROUND LEVEL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. FISSION & ACTIVATION GASES					
Kr-85	Ci	N/D	N/D	8.00E-01	N/D
Kr-85m	Ci	N/D	N/D	N/D	N/D
Kr-87	Ci	N/D	N/D	N/D	N/D
Kr-88	Ci	N/D	N/D	N/D	N/D
Xe-133	Ci	N/D	N/D	N/D	N/D
Xe-135	Ci	2.34E-04	2.73E-04	4.94E-04	1.33E-03
Xe-135m	Ci	N/D	3.48E-05	N/D	N/D
Xe-138	Ci	N/D	4.78E-05	N/D	2.45E-03
Xe-131m	Ci	N/D	N/D	N/D	N/D
Xe-133m	Ci	N/D	N/D	N/D	N/D
Ar-41	Ci	2.42E-04	1.05E-03	N/D	1.11E-02
TOTAL FOR PERIOD	Ci	4.77E-04	1.41E-03	8.01E-01	1.49E-02
2. IODINES					
I-131	Ci	N/D	N/D	N/D	N/D
I-133	Ci	N/D	N/D	N/D	N/D
I-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A
3. PARTICULATES					
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	4.74E-06	N/D	N/D
Co-60	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	N/D	N/D
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mo-99	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	N/A	4.74E-06	N/A	N/A

TABLE 2A

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES**

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	1.33E-02	9.71E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	2.15E-11	1.40E-11	
3. PERCENT OF APPLICABLE LIMIT	%	3.73E-05	2.66E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	1.31E+02	3.48E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	2.12E-07	5.02E-07	
3. PERCENT OF APPLICABLE LIMIT	%	2.12E-03	5.02E-03	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	1.43E-05	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	N/A	2.06E-14	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	1.03E-08	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	4.60E+07	4.16E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.19E+11	6.94E+11	3.00E+00

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT  
PERIOD: 1/1/08 TO 12/31/08  
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	2.09E-03	2.94E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	2.72E-12	4.49E-12	
3. PERCENT OF APPLICABLE LIMIT	%	1.18E-05	1.42E-05	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	Ci	6.11E+01	6.17E+01	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	7.98E-08	9.45E-08	
3. PERCENT OF APPLICABLE LIMIT	%	7.98E-04	9.45E-04	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
<b>E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)</b>				
	LITERS	3.92E+07	3.69E+07	3.00E+00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	7.66E+11	6.53E+11	3.00E+00

## EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

PERIOD: 1/1/08 TO 12/31/08

## LIQUID EFFLUENTS

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
Sr-89	Ci	N/D	N/D	N/D	N/D
Sr-90	Ci	N/D	N/D	N/D	N/D
Fe-55	Ci	N/D	N/D	N/D	N/D
Cs-134	Ci	N/D	N/D	N/D	N/D
Cs-137	Ci	4.99E-04	7.00E-04	2.76E-04	4.31E-04
I-131	Ci	N/D	N/D	N/D	4.04E-06
Co-58	Ci	N/D	3.19E-05	4.08E-03	4.99E-03
Co-60	Ci	N/D	N/D	3.53E-03	1.20E-03
Fe-59	Ci	N/D	N/D	N/D	N/D
Zn-65	Ci	N/D	N/D	N/D	N/D
Mn-54	Ci	N/D	N/D	7.29E-04	1.07E-04
Cr-51	Ci	N/D	N/D	2.04E-04	6.81E-04
Zr-95	Ci	N/D	N/D	N/D	N/D
Nb-95	Ci	N/D	N/D	N/D	7.14E-06
Mo-99	Ci	N/D	N/D	N/D	N/D
Tc-99m	Ci	N/D	N/D	N/D	N/D
Ba-140	Ci	N/D	N/D	N/D	N/D
La-140	Ci	N/D	N/D	N/D	N/D
Ce-141	Ci	N/D	N/D	N/D	N/D
Ce-144	Ci	N/D	N/D	N/D	N/D
Sb-124	Ci	N/D	N/D	N/D	7.87E-06
Sb-125	Ci	N/D	N/D	3.88E-03	1.51E-03
Co-57	Ci	N/D	N/D	8.55E-05	4.40E-05
TOTAL FOR PERIOD		Ci	4.99E-04	7.32E-04	1.28E-02
					8.98E-03
Xe-133	Ci	N/D	N/D	N/D	1.43E-05
Xe-135	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD		Ci	N/A	N/A	N/A
					1.43E-05



**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT**  
**PERIOD: 1/1/08 TO 12/31/08**  
**LIQUID EFFLUENTS**

SURREY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE		BATCH MODE		
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER	
Sr-89	Ci	N/D	N/D	N/D	N/D	
Sr-90	Ci	N/D	N/D	N/D	N/D	
Fe-55	Ci	N/D	N/D	N/D	N/D	
Cs-134	Ci	N/D	N/D	N/D	N/D	
Cs-137	Ci	5.73E-04	5.96E-04	5.12E-05	9.40E-05	
I-131	Ci	N/D	N/D	N/D	N/D	
Co-58	Ci	N/D	N/D	5.10E-04	5.64E-04	
Co-60	Ci	N/D	N/D	7.29E-04	5.13E-04	
Fe-59	Ci	N/D	N/D	N/D	N/D	
Zn-65	Ci	N/D	N/D	N/D	N/D	
Mn-54	Ci	N/D	N/D	1.00E-04	2.72E-05	
Cr-51	Ci	N/D	N/D	N/D	N/D	
Zr-95	Ci	N/D	N/D	N/D	N/D	
Nb-95	Ci	N/D	N/D	5.20E-06	N/D	
Mo-99	Ci	N/D	N/D	N/D	N/D	
Tc-99m	Ci	N/D	N/D	N/D	N/D	
Ba-140	Ci	N/D	N/D	N/D	N/D	
La-140	Ci	N/D	N/D	N/D	N/D	
Ce-141	Ci	N/D	N/D	N/D	N/D	
Ce-144	Ci	N/D	N/D	N/D	N/D	
Sb-124	Ci	N/D	N/D	N/D	N/D	
Sb-125	Ci	N/D	N/D	1.08E-04	1.14E-03	
Co-57	Ci	N/D	N/D	7.14E-06	N/D	
TOTAL FOR PERIOD		Ci	5.73E-04	5.96E-04	1.51E-03	2.34E-03
Xe-133	Ci	N/D	N/D	N/D	N/D	
Xe-135	Ci	N/D	N/D	N/D	N/D	
TOTAL FOR PERIOD		Ci	N/A	N/A	N/A	N/A

### ANNUAL AND QUARTERLY DOSES

An assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, along with an annual total of each effluent pathway is made pursuant to the ODCM, Section 6.7.2, requirement.

2008	LIQUID			GASEOUS		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)	Gamma (mrad)	Beta (mrad)	Lung (mrem)
1st Quarter	4.43E-05	1.59E-04	4.21E-05	8.25E-06	7.83E-06	4.52E-02
2nd Quarter	7.55E-05	1.41E-04	7.50E-05	6.99E-05	8.12E-05	3.39E-02
3rd Quarter	1.46E-05	3.26E-05	1.53E-05	3.32E-05	2.97E-03	2.95E-02
4th Quarter	1.74E-05	2.99E-05	1.84E-05	2.65E-04	1.06E-04	1.81E-02
Annual	1.52E-04	3.63E-04	1.51E-04	3.76E-04	3.17E-03	1.27E-01