VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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United States Nuclear Regulatory Commission
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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, 2021, through December 31, 2021. 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 2021 calendar year, as outlined in Regulatory Guide 1.21, Revision 1, June 1974.

If you have any further questions, please contact William Terry at 757-365-2010.

Sincerely,

FOR J. HENDERSON

J. Henderson
Director Nuclear Safety & Licensing
Surry Power Station

Attachment

Commitments made in this letter: None

cc: U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
ATTN: Division of Reactor Safety – Radiation Safety Branch
245 Peachtree Center Ave., NE Suite 1200
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NRC Senior Resident Inspector
Surry Power Station

ATTACHMENT

2021 Annual Radioactive Effluent Release Report

Surry Power Station

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

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

FOR

SURRY POWER STATION

January 1, 2021 through December 31, 2021

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ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

SURRY POWER STATION

January 1, 2021 through December 31, 2021

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Approved By: _____

W. Terry
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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 2021 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 effluent release and no unplanned gaseous effluent release as classified according to the criteria in the Offsite Dose Calculation Manual.

Based on the 2021 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 3.91E-04 mrem, which is 6.52E-03% of the 6 mrem dose limit. The critical organ dose due to liquid effluents was 4.66E-04 mrem to the GI-LLI, which is 2.33E-03% of the 20 mrem dose limit.

2. The air dose due to noble gases in gaseous effluents was 3.82E-05 mrad gamma, which is 1.91E-04% of the 20 mrad gamma dose limit, and 1.79E-05 mrad beta, which is 4.48E-05% 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 9.13E-02 mrem, which is 3.04E-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 revisions made 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 2021.

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.

Attachment 6 provides a summary of unplanned releases that occurred during the reporting period.

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 is provided in Attachment 8 of on-site radioactive leaks or spills and ground water sample analyses that were communicated in accordance with the Industry Ground Water Protection Initiative reporting protocol. Sample analyses from ground water wells that are not part of the Radiological Environmental Monitoring Program are also 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 was modeled as a child for the 1st, 2nd, 3rd, and 4th quarters.

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 released 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 modeled as a child at 0.33 miles for the 1st quarter and a child at 2.01 miles for the 2nd, 3rd, and 4th quarters. The bone was selected as the critical organ via the ingestion pathway for 2021. The maximum exposed member of the public from radioactive materials in liquid effluents in unrestricted areas was modeled as 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.

No effluent radiation monitors were inoperable for greater than 30 days in 2021. This is reported in Attachment 5 as required by the ODCM, Section 6.2.2 and 6.3.2.

There were no unplanned liquid release and no unplanned gaseous releases in 2021. This is reported in Attachment 6 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 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.

EFFLUENT RELEASE DATA

January 1, 2021 through December 31, 2021

Attachment 1 provides 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: 1/1/21 TO 12/31/21
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	6.46E-03	8.01E-02	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	8.31E-04	1.02E-02	
B. IODINE				
1. TOTAL I-131	Ci	N/D	2.82E-09	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	3.59E-10	
C. PARTICULATE				
1. HALF-LIFE >8 DAYS	Ci	1.04E-05	1.15E-05	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	1.34E-06	1.46E-06	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	Ci	7.30E+00	1.29E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	9.39E-01	1.63E+00	
E. CARBON-14				
1. TOTAL RELEASE	Ci	5.70E-01	7.06E+00	
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	7.33E-02	8.98E-01	
PERCENTAGE OF T.S. LIMITS				
CRITICAL ORGAN DOSE RATE	%	3.16E-03	2.86E-03	
TOTAL BODY DOSE RATE	%	2.64E-05	2.39E-06	
SKIN DOSE RATE	%	6.44E-06	6.93E-07	

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
GASEOUS EFFLUENT-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
A. FISSION & ACTIVATION GASES				
1. TOTAL RELEASE	Ci	4.67E-02	6.92E-02	1.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	5.88E-03	8.70E-03	
B. IODINE				
1. TOTAL I-131	Ci	N/D	N/D	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	N/A	N/A	
C. PARTICULATE				
1. HALF-LIFE >8 DAYS	Ci	1.96E-06	8.69E-07	2.80E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	2.47E-07	1.09E-07	
3. GROSS ALPHA RADIOACTIVITY	Ci	N/D	N/D	
D. TRITIUM				
1. TOTAL RELEASE	Ci	6.52E+00	2.00E+01	3.10E+01
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	8.21E-01	2.52E+00	
E. CARBON-14				
1. TOTAL RELEASE	Ci	4.12E+00	6.10E+00	
2. AVE RELEASE RATE FOR PERIOD	µCi/sec	5.18E-01	7.67E-01	
PERCENTAGE OF T.S. LIMITS				
CRITICAL ORGAN DOSE RATE	%	1.28E-03	3.98E-03	
TOTAL BODY DOSE RATE	%	8.29E-08	3.11E-07	
SKIN DOSE RATE	%	3.26E-08	1.22E-07	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
GASEOUS EFFLUENTS-MIXED MODE RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	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	7.50E-02
Xe-135	Ci	N/D	N/D	N/D	1.80E-04
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	N/A	7.52E-02
2. IODINES					
I-131	Ci	N/D	2.82E-09	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	2.82E-09	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
C-14	Ci	N/D	N/D	N/D	6.63E+00
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	6.63E+00

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
GASEOUS EFFLUENTS-MIXED MODE RELEASES

		CONTINUOUS MODE		BATCH MODE	
SURRY POWER STATION UNITS 1&2	UNIT	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	4.67E-02	6.75E-02
Xe-135	Ci	N/D	N/D	N/D	2.67E-04
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	4.67E-02	6.77E-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	8.48E-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
C-14	Ci	N/D	N/D	4.12E+00	5.97E+00
TOTAL FOR PERIOD	Ci	8.48E-09	N/A	4.12E+00	5.97E+00

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	CONTINUOUS MODE FIRST QUARTER	CONTINUOUS MODE SECOND QUARTER	BATCH MODE FIRST QUARTER	BATCH MODE 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	4.49E-03
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	6.84E-04	4.07E-04	5.78E-03	N/D
TOTAL FOR PERIOD	Ci	6.84E-04	4.07E-04	5.78E-03	4.49E-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	N/D	1.15E-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
Nb-95	Ci	6.63E-06	N/D	N/D	N/D
Zr-95	Ci	3.78E-06	N/D	N/D	N/D
C-14	Ci	6.03E-02	3.59E-02	5.10E-01	3.96E-01
TOTAL FOR PERIOD	Ci	6.03E-02	3.59E-02	5.10E-01	3.96E-01

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
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	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	1.42E-03
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	N/A	1.42E-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	1.96E-06	8.69E-07	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
C-14	Ci	N/D	N/D	N/D	1.25E-01
TOTAL FOR PERIOD	Ci	1.96E-06	8.69E-07	N/A	1.25E-01

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	FIRST QUARTER	SECOND QUARTER	% EST. ERROR
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	7.07E-04	3.82E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	2.78E-13	1.77E-12	
3. PERCENT OF APPLICABLE LIMIT	%	9.36E-07	2.59E-06	
B. TRITIUM				
1. TOTAL RELEASE	Ci	3.29E+02	8.25E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	1.29E-07	3.81E-07	
3. PERCENT OF APPLICABLE LIMIT	%	1.29E-03	3.81E-03	
C. DISSOLVED AND ENTRAINED GASES				
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	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.29E+07	5.39E+07	3.00E+00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	2.54E+12	2.17E+12	3.00E+00

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

SURRY POWER STATION UNITS 1&2	UNIT	THIRD QUARTER	FOURTH QUARTER	% EST. ERROR
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	5.44E-03	2.87E-03	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	1.72E-12	1.30E-12	
3. PERCENT OF APPLICABLE LIMIT	%	2.21E-06	1.69E-06	
B. TRITIUM				
1. TOTAL RELEASE	Ci	1.95E+02	4.21E+02	2.00E+01
2. AVE DIL. CONC. DURING PERIOD	µCi/mL	6.16E-08	1.91E-07	
3. PERCENT OF APPLICABLE LIMIT	%	5.40E-04	3.43E-03	
C. DISSOLVED AND ENTRAINED GASES				
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	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	Ci	N/D	N/D	2.00E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.41E+07	5.46E+07	3.00E+00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	3.17E+12	2.21E+12	3.00E+00

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD: 1/1/21 TO 12/31/21
LIQUID EFFLUENTS

SURRY 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	1.13E-04	1.28E-04	6.65E-05	4.63E-05
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	3.24E-05	1.39E-03
Co-60	Ci	N/D	N/D	1.36E-04	7.80E-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	N/D	N/D
Cr-51	Ci	N/D	N/D	N/D	4.81E-05
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	9.15E-05
Sb-125	Ci	N/D	N/D	3.60E-04	1.34E-03
Nd-147	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	1.13E-04	1.28E-04	5.95E-04	3.70E-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: 1/1/21 TO 12/31/21
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	2.02E-04	2.36E-04	5.75E-05	1.50E-05
I-131	Ci	N/D	N/D	N/D	N/D
Co-58	Ci	N/D	N/D	2.50E-03	6.65E-04
Co-60	Ci	N/D	N/D	7.57E-04	7.96E-05
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	3.20E-05	N/D
Cr-51	Ci	N/D	N/D	6.69E-05	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	2.00E-05	N/D
Sb-125	Ci	N/D	N/D	1.81E-03	1.86E-03
Nd-147	Ci	N/D	N/D	N/D	5.87E-06
Nb-97	Ci	N/D	N/D	N/D	N/D
TOTAL FOR PERIOD	Ci	2.02E-04	2.36E-04	5.24E-03	2.63E-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 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
PERIOD: 1/1/21 - 12/31/21

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^3	1.03E+01	Note 1	1.00E+01
	Ci	3.01E+02		3.00E+01
b. Dry compressible waste, contaminated equip., etc.	m^3	4.21E+02	Note 2	1.00E+01
	Ci	2.13E-01		3.00E+01
c. Irradiated components, control rods, etc.	m^3	0.00E+00		1.00E+01
	Ci	0.00E+00		3.00E+01
d. Other (Waste oil)	m^3	3.57E+00	Note 3	1.00E+01
	Ci	3.84E-03		3.00E+01

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

a. Fe-55	%	7.44E+00
Co-58	%	9.12E+00
Co-60	%	3.31E+01
Ni-63	%	2.55E+01
Sn-113	%	1.64E+00
Sb-125	%	1.92E+01
Cs-137	%	1.32E+00
b. Mn-54	%	4.17E+00
Fe-55	%	4.83E+00
Co-58	%	4.39E+00
Co-60	%	6.70E+01
Ni-63	%	7.29E+00
Zr-95	%	3.02E+00
Nb-95	%	5.26E+00
Sb-125	%	1.43E+00
Pu-241	%	1.38E+00
c. N/A	%	N/A
d. H-3	%	9.87E+01
Cs-137	%	1.31E+00

TABLE 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
PERIOD: 1/1/21 - 12/31/21
CONTINUED

SURRY POWER STATION

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

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
11	Truck	Oak Ridge, TN (Energy*Solutions*)
3	Truck	Erwin, TN (Resin*Solutions*)

B. IRRADIATED FUEL SHIPMENT (Disposition)

Number of Shipments	Mode of Transportation	Destination
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 3.15E+00 m^3.

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 3.91E+01 m^3.

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 0.00E+00 m^3.

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.

2021	LIQUID		
	Maximum Receptor - Adult		
	Total Body (mrem)	GI-LLI (mrem)	Liver (mrem)
1st Quarter	6.42E-05	6.66E-05	6.45E-05
2nd Quarter	1.93E-04	2.26E-04	1.91E-04
3rd Quarter	3.59E-05	6.53E-05	3.46E-05
4th Quarter	9.78E-05	1.09E-04	9.80E-05
Annual	3.91E-04	4.66E-04	3.88E-04

2021	GASEOUS - Air Dose	
	Gamma (mrad)	Beta (mrad)
1st Quarter	3.43E-05	1.21E-05
2nd Quarter	3.27E-06	4.06E-06
3rd Quarter	1.26E-07	3.73E-07
4th Quarter	4.71E-07	1.39E-06
Annual	3.82E-05	1.79E-05

2021	GASEOUS - Organ Dose		
	Annual Maximum	Maximum by Quarter	
	Child/Bone (mrem)	(mrem)	Receptor / Organ
1st Quarter	7.93E-03	1.17E-02	Child/Bone
2nd Quarter	3.60E-02	3.60E-02	Child/Bone
3rd Quarter	1.86E-02	1.86E-02	Child/Bone
4th Quarter	2.87E-02	2.87E-02	Child/Bone
Annual	9.13E-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 monitoring instrumentation required by Attachments 1 and 5 of the ODCM were determined to be inoperable and were not returned to operable status within 30 days. No radiation monitors referenced on Attachments 1 and 5 of the ODCM were inoperable greater than 30 days during this reporting period.

UNPLANNED RELEASES

In accordance with the ODCM reporting requirements, no unplanned liquid or unplanned gaseous releases occurred during the reporting period.

LOWER LIMIT OF DETECTION (LLD) FOR EFFLUENT SAMPLE ANALYSIS

	Isotope	Required LLD	Typical LLD
GASEOUS:	Kr-87	1.00E-04	2.10E-06 - 1.78E-05
	Kr-88	1.00E-04	1.11E-06 - 1.88E-05
	Xe-133	1.00E-04	9.74E-07 - 4.06E-05
	Xe-133m	1.00E-04	3.93E-06 - 4.06E-05
	Xe-135	1.00E-04	5.50E-07 - 5.76E-06
	Xe-135m	1.00E-04	8.98E-06 - 9.41E-05
	Xe-138	1.00E-04	1.81E-05 - 9.90E-05
	I-131	1.00E-12	4.06E-13 - 4.06E-13
	I-133	1.00E-10	4.06E-11 - 4.06E-11
	Sr-89	1.00E-11	1.20E-14 - 3.51E-12
	Sr-90	1.00E-11	1.91E-15 - 4.86E-13
	Cs-134	1.00E-11	1.24E-13 - 7.83E-13
	Cs-137	1.00E-11	1.85E-13 - 8.48E-13
	Mn-54	1.00E-11	1.55E-13 - 8.21E-13
	Fe-59	1.00E-11	4.42E-14 - 2.01E-12
	Co-58	1.00E-11	1.70E-13 - 9.65E-13
	Co-60	1.00E-11	2.92E-14 - 1.16E-12
	Zn-65	1.00E-11	5.54E-14 - 2.14E-12
	Mo-99	1.00E-11	4.06E-12 - 4.06E-12
	Ce-141	1.00E-11	1.66E-13 - 6.87E-13
	Ce-144	1.00E-11	5.96E-13 - 3.06E-12
	Alpha	1.00E-11	1.66E-14 - 2.08E-14
	Tritium	1.00E-06	5.23E-08 - 1.07E-07
LIQUID:	Sr-89	5.00E-08	4.39E-09 - 6.82E-07
	Sr-90	5.00E-08	6.91E-10 - 2.05E-08
	Cs-134	5.00E-07	2.10E-08 - 6.39E-08
	Cs-137	5.00E-07	2.70E-08 - 1.10E-07
	I-131	1.00E-06	2.65E-08 - 5.32E-08
	Co-58	5.00E-07	2.01E-08 - 7.24E-08
	Co-60	5.00E-07	5.51E-09 - 8.11E-08
	Fe-59	5.00E-07	8.05E-09 - 9.80E-08
	Zn-65	5.00E-07	1.06E-08 - 1.66E-07
	Mn-54	5.00E-07	2.28E-08 - 7.99E-08
	Mo-99	5.00E-07	4.95E-07 - 4.95E-07
	Ce-141	5.00E-07	3.48E-08 - 6.75E-08
	Ce-144	5.00E-07	1.59E-07 - 3.47E-07
	Fe-55	1.00E-06	4.07E-08 - 9.91E-07
	Alpha	1.00E-07	2.50E-08 - 3.23E-08
	Tritium	1.00E-05	1.29E-06 - 2.64E-06
	Xe-133	1.00E-05	6.67E-08 - 2.72E-07
	Xe-135	1.00E-05	2.50E-08 - 4.88E-08
	Xe-133m	1.00E-05	2.22E-07 - 3.77E-07
	Xe-135m	1.00E-05	1.26E-06 - 2.68E-06
	Xe-138	1.00E-05	6.40E-07 - 7.63E-06
	Kr-87	1.00E-05	7.81E-08 - 2.21E-07
	Kr-88	1.00E-05	8.06E-08 - 1.97E-07

INDUSTRY GROUND WATER PROTECTION INITIATIVE

The following is a summary of 2021 sample analyses of ground water monitoring wells that are not a part of the Radiological Environmental Monitoring Program (REMP).

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
G-08	1/12/21	855	NA	NA	NA	NA	NA
1-PL-Piez-44	1/12/21	25100	NA	NA	NA	NA	NA
1-PL-Piez-49	1/12/21	25300	NA	NA	NA	NA	NA
1-PL-Piez-51	1/12/21	1940	NA	NA	NA	NA	NA
1-PL-Piez-50	1/14/21	25.1	NA	NA	NA	NA	NA
G-08	1/19/21	606	NA	NA	NA	NA	NA
1-PL-Piez-44	1/19/21	16700	NA	NA	NA	NA	NA
1-PL-Piez-48	1/19/21	198	NA	NA	NA	NA	NA
1-PL-Piez-49	1/19/21	26500	NA	NA	NA	NA	NA
1-PL-Piez-51	1/19/21	2170	NA	NA	NA	NA	NA
G-08	2/8/21	2850	NA	NA	NA	NA	NA
1-PL-Piez-49	2/8/21	1740	NA	NA	NA	NA	NA
1-PL-Piez-51	2/8/21	2710	NA	NA	NA	NA	NA
1-PL-Piez-48	2/9/21	<691	NA	NA	NA	NA	NA
1-PL-Piez-50	2/9/21	<691	NA	NA	NA	NA	NA
1-PL-Piez-48	2/10/21	<681	NA	NA	NA	NA	NA
1-PL-Piez-48	2/10/21	102	NA	NA	NA	NA	NA
1-PL-Piez-50	2/10/21	<681	NA	NA	NA	NA	NA
G-08	2/22/21	9530	NA	NA	NA	NA	NA
1-PL-Piez-44	2/22/21	5700	NA	NA	NA	NA	NA
1-PL-Piez-49	2/22/21	5180	NA	NA	NA	NA	NA
1-PL-Piez-51	2/22/21	2380	NA	NA	NA	NA	NA
1-PL-Piez-29	2/24/21	<954	ND	<61.25	<4.17	<.807	NA
1-PL-Piez-46	2/24/21	<951	ND	<78.24	<3.82	<.824	NA
1-PL-Piez-52	2/24/21	<953	NA	NA	NA	NA	NA
1-PL-Piez-04	2/25/21	<949	NA	NA	NA	NA	NA
1-PL-Piez-05	2/25/21	3120	NA	<44.39	<4.09	<.815	NA
1-PL-Piez-06	2/25/21	<950	ND	<176.8	<3.85	<.778	NA
1-PL-Piez-07	2/25/21	<953	NA	NA	NA	NA	NA
1-PL-Piez-43	2/25/21	<950	NA	NA	NA	NA	NA
1-PL-Piez-45	2/25/21	<951	ND	<118.7	<4.59	<.895	NA
1-PL-Piez-47	2/25/21	1300	ND	<48.91	<4.78	<.832	NA
1-PL-Piez-49	3/3/21	1700	NA	<146.2	<3.72	<.870	NA

NA = Analysis not required.

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

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
1-PL-Piez-51	3/3/21	1360	ND	<127.7	<4.14	<.947	NA
1-PL-Piez-51	3/4/21	3250	NA	NA	NA	NA	NA
G-08	3/10/21	3230	NA	NA	NA	NA	NA
G-08	3/22/21	2600	NA	NA	NA	NA	NA
1-PL-Piez-44	3/22/21	1380	ND	<40.65	<4.72	<.975	NA
1-PL-Piez-48	3/22/21	105	NA	NA	NA	NA	NA
1-PL-Piez-49	3/22/21	2070	NA	NA	NA	NA	NA
1-PL-Piez-50	3/22/21	0	NA	NA	NA	NA	NA
1-PL-Piez-51	3/22/21	2140	NA	NA	NA	NA	NA
G-08	3/24/21	2600	NA	NA	NA	NA	NA
G-08	3/30/21	2550	NA	NA	NA	NA	NA
1-PL-Piez-44	3/30/21	1460	NA	NA	NA	NA	NA
1-PL-Piez-48	3/30/21	86.1	NA	NA	NA	NA	NA
1-PL-Piez-49	3/30/21	1650	NA	NA	NA	NA	NA
1-PL-Piez-50	3/30/21	0	NA	NA	NA	NA	NA
1-PL-Piez-51	3/30/21	1980	NA	NA	NA	NA	NA
G-08	4/13/21	3030	NA	NA	NA	NA	NA
1-PL-Piez-44	4/13/21	3150	NA	NA	NA	NA	NA
1-PL-Piez-51	4/13/21	1980	NA	NA	NA	NA	NA
1-PL-Piez-49	4/15/21	1950	NA	NA	NA	NA	NA
G-08	4/25/21	3170	NA	NA	NA	NA	NA
1-PL-Piez-44	4/25/21	2550	NA	NA	NA	NA	NA
1-PL-Piez-49	4/25/21	1310	NA	NA	NA	NA	NA
1-PL-Piez-51	4/25/21	1320	NA	NA	NA	NA	NA
G-08	5/10/21	4460	NA	NA	NA	NA	NA
1-PL-Piez-49	5/10/21	1460	ND	NA	NA	NA	NA
1-PL-Piez-51	5/10/21	2200	ND	NA	NA	NA	NA
1-PL-Piez-44	5/14/21	1930	ND	NA	NA	NA	NA
1-PL-Piez-44	5/20/21	2480	ND	NA	NA	NA	NA
1-PL-Piez-47	5/21/21	621	ND	NA	NA	NA	NA
G-08	5/23/21	3920	ND	NA	NA	NA	NA
1-PL-Piez-44	5/23/21	1340	NA	NA	NA	NA	NA
1-PL-Piez-49	5/23/21	856	NA	NA	NA	NA	NA

NA = Analysis not required.

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

INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
1-PL-Piez-51	5/23/21	2240	NA	NA	NA	NA	NA
1-PL-Piez-50	5/31/21	<786	NA	NA	NA	NA	NA
1-PL-Piez-06	6/1/21	<790	NA	NA	NA	NA	NA
1-PL-Piez-08	6/1/21	703	NA	NA	NA	NA	NA
1-PL-Piez-09	6/1/21	159	NA	NA	NA	NA	NA
1-PL-Piez-20	6/1/21	466	NA	NA	NA	NA	NA
1-PL-Piez-22	6/1/21	658	NA	NA	NA	NA	NA
1-PL-Piez-24	6/1/21	575	NA	NA	NA	NA	NA
1-PL-Piez-28	6/1/21	388	NA	NA	NA	NA	NA
1-PL-Piez-43	6/1/21	<770	NA	NA	NA	NA	NA
1-PL-Piez-44	6/1/21	1560	NA	NA	NA	NA	NA
1-PL-Piez-45	6/1/21	<787	NA	NA	NA	NA	NA
1-PL-Piez-47	6/1/21	1110	NA	NA	NA	NA	NA
1-PL-Piez-50	6/1/21	757	NA	NA	NA	NA	NA
1-PL-Piez-34	6/7/21	505	NA	NA	NA	NA	NA
1-PL-Piez-36	6/7/21	33.4	NA	NA	NA	NA	NA
1-PL-Piez-37	6/7/21	577	NA	NA	NA	NA	NA
1-PL-Piez-38	6/7/21	237	NA	NA	NA	NA	NA
1-PL-Piez-39	6/7/21	429	NA	NA	NA	NA	NA
1-PL-Piez-40	6/7/21	309	NA	NA	NA	NA	NA
1-PL-Piez-53	6/7/21	0	NA	NA	NA	NA	NA
1-PL-Piez-03	6/8/21	251	NA	NA	NA	NA	NA
1-PL-Piez-05	6/8/21	2590	NA	NA	NA	NA	NA
1-PL-Piez-23	6/8/21	442	NA	NA	NA	NA	NA
1-PL-Piez-48	6/8/21	336	NA	NA	NA	NA	NA
1-PL-Piez-29	6/9/21	<772	NA	NA	NA	NA	NA
1-PL-Piez-46	6/9/21	<761	NA	NA	NA	NA	NA
1-PL-Piez-48	6/9/21	<768	ND	NA	NA	NA	NA
1-PL-Piez-51	6/9/21	1410	ND	NA	NA	NA	NA
1-PL-Piez-52	6/9/21	<913	ND	NA	NA	NA	NA
G-08	6/17/21	18400	ND	NA	NA	NA	NA
G-08	6/18/21	17300	ND	NA	NA	NA	NA
G-08	6/21/21	3330	ND	NA	NA	NA	NA
1-PL-Piez-49	6/21/21	2640	ND	NA	NA	NA	NA
G-08	7/6/21	2910	ND	NA	NA	NA	NA
1-PL-Piez-44	7/6/21	2850	NA	NA	NA	NA	NA
1-PL-Piez-51	7/6/21	2460	NA	NA	NA	NA	NA
1-PL-Piez-49	7/13/21	1850	NA	NA	NA	NA	NA
G-08	7/19/21	3920	NA	NA	NA	NA	NA

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INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
1-PL-Piez-51	7/19/21	2140	NA	NA	NA	NA	NA
1-PL-Piez-44	7/21/21	2490	NA	NA	NA	NA	NA
1-PL-Piez-49	7/21/21	2040	NA	NA	NA	NA	NA
1-PL-Piez-44	7/31/21	2230	NA	NA	NA	NA	NA
1-PL-Piez-51	7/31/21	2690	NA	NA	NA	NA	NA
G-08	8/2/21	3820	NA	NA	NA	NA	NA
1-PL-Piez-44	8/2/21	3610	NA	NA	NA	NA	NA
1-PL-Piez-47	8/2/21	1910	NA	NA	NA	NA	NA
1-PL-Piez-51	8/2/21	2470	NA	NA	NA	NA	NA
1-PL-Piez-48	8/4/21	282	NA	NA	NA	NA	NA
1-PL-Piez-44	8/16/21	2000	NA	NA	NA	NA	NA
1-PL-Piez-51	8/16/21	5780	NA	NA	NA	NA	NA
G-08	8/17/21	4120	NA	NA	NA	NA	NA
1-PL-Piez-51	8/17/21	6840	NA	NA	NA	NA	NA
1-PL-Piez-07	8/19/21	645	NA	NA	NA	NA	NA
1-PL-Piez-49	8/19/21	7240	NA	NA	NA	NA	NA
G-08	8/24/21	5680	ND	ND	ND	ND	NA
1-PL-Piez-29	8/24/21	852	ND	ND	ND	ND	NA
1-PL-Piez-44	8/24/21	2090	ND	ND	ND	ND	NA
1-PL-Piez-46	8/24/21	425	ND	ND	ND	ND	NA
1-PL-Piez-47	8/24/21	544	ND	ND	ND	ND	NA
1-PL-Piez-49	8/24/21	1630	ND	ND	ND	ND	NA
1-PL-Piez-51	8/24/21	7380	ND	ND	ND	ND	NA
G-08	8/31/21	6560	NA	NA	NA	NA	NA
1-PL-Piez-44	8/31/21	2170	NA	NA	NA	NA	NA
1-PL-Piez-51	8/31/21	15700	NA	NA	NA	NA	NA
1-PL-Piez-49	9/1/21	714	NA	NA	NA	NA	NA
1-PL-Piez-51	9/1/21	11300	NA	NA	NA	NA	NA
1-PL-Piez-49	9/13/21	2430	ND	ND	ND	ND	NA
1-PL-Piez-51	9/13/21	19500	NA	NA	NA	NA	NA
G-08	9/14/21	6660	NA	NA	NA	NA	NA
1-PL-Piez-44	9/14/21	1970	NA	NA	NA	NA	NA
1-PL-Piez-48	9/15/21	<704	NA	NA	NA	NA	NA
1-PL-Piez-48	9/15/21	233	NA	NA	NA	NA	NA
1-PL-Piez-25	9/20/21	220	NA	NA	NA	NA	NA
1-PL-Piez-29	9/20/21	1140	ND	NA	NA	NA	NA
1-PL-Piez-46	9/20/21	<705	ND	NA	NA	NA	NA
1-PL-Piez-49	9/20/21	2280	ND	NA	NA	NA	NA

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INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
1-PL-Piez-50	9/20/21	<723	ND	NA	NA	NA	NA
1-PL-Piez-51	9/20/21	16600	ND	NA	NA	NA	NA
1-PL-Piez-52	9/20/21	<710	ND	NA	NA	NA	NA
1-PL-Piez-04	9/27/21	<739	ND	NA	NA	NA	NA
1-PL-Piez-05	9/27/21	2330	NA	NA	NA	NA	NA
1-PL-Piez-06	9/27/21	<748	NA	NA	NA	NA	NA
1-PL-Piez-43	9/27/21	<730	NA	NA	NA	NA	NA
1-PL-Piez-44	9/27/21	1900	NA	NA	NA	NA	NA
1-PL-Piez-45	9/27/21	<732	ND	NA	NA	NA	NA
1-PL-Piez-07	9/28/21	<726	ND	NA	NA	NA	NA
1-PL-Piez-07	9/28/21	483	ND	NA	NA	NA	NA
1-PL-Piez-33	9/28/21	12.2	ND	NA	NA	NA	NA
1-PL-Piez-41	9/28/21	368	ND	NA	NA	NA	NA
1-PL-Piez-42	9/28/21	833	ND	NA	NA	NA	NA
1-PL-Piez-47	9/28/21	<692	NA	NA	NA	NA	NA
1-PL-Piez-50	9/29/21	888	ND	NA	NA	NA	NA
1-PL-Piez-51	9/29/21	18000	ND	NA	NA	NA	NA
1-PL-Piez-52	9/29/21	578	ND	NA	NA	NA	NA
G-08	10/14/21	16000	NA	NA	NA	NA	NA
1-PL-Piez-44	10/14/21	1970	ND	NA	NA	NA	NA
1-PL-Piez-49	10/14/21	1350	ND	NA	NA	NA	NA
1-PL-Piez-51	10/14/21	14900	NA	NA	NA	NA	NA
G-08	10/15/21	10900	NA	NA	NA	NA	NA
G-08	10/25/21	13700	NA	NA	NA	NA	NA
1-PL-Piez-49	10/25/21	2140	NA	NA	NA	NA	NA
1-PL-Piez-51	10/25/21	16000	NA	NA	NA	NA	NA
1-PL-Piez-44	10/26/21	1950	NA	NA	NA	NA	NA
G-08	11/7/21	15200	NA	NA	NA	NA	NA
1-PL-Piez-44	11/7/21	2040	ND	NA	NA	NA	NA
1-PL-Piez-51	11/7/21	15900	ND	NA	NA	NA	NA
1-PL-Piez-49	11/8/21	1490	NA	NA	NA	NA	NA
1-PL-Piez-29	11/9/21	761	NA	NA	NA	NA	NA
1-PL-Piez-46	11/9/21	<685	ND	NA	NA	NA	NA
1-PL-Piez-49	11/9/21	1130	NA	NA	NA	NA	NA

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INDUSTRY GROUND WATER PROTECTION INITIATIVE

Well Designation	Sample Date	Tritium pCi/Liter	Gamma pCi/Liter	Fe-55 pCi/Liter	Ni-63 pCi/Liter	Sr-90 pCi/Liter	TRU pCi/Liter
1-PL-Piez-51	11/9/21	14800	NA	NA	NA	NA	NA
1-PL-Piez-05	11/11/21	2730	NA	NA	NA	NA	NA
1-PL-Piez-06	11/11/21	<691	NA	NA	NA	NA	NA
1-PL-Piez-43	11/11/21	<666	ND	NA	NA	NA	NA
1-PL-Piez-44	11/11/21	1070	NA	NA	NA	NA	NA
1-PL-Piez-45	11/11/21	<690	ND	NA	NA	NA	NA
1-PL-Piez-47	11/11/21	780	NA	NA	NA	NA	NA
G-08	11/22/21	17400	NA	NA	NA	NA	NA
1-PL-Piez-44	11/22/21	2150	NA	NA	NA	NA	NA
1-PL-Piez-49	11/22/21	4530	ND	NA	NA	NA	NA
1-PL-Piez-51	11/22/21	21300	ND	NA	NA	NA	NA
1-PL-Piez-47	12/2/21	1820	ND	NA	NA	NA	NA
1-PL-Piez-48	12/2/21	<924	NA	NA	NA	NA	NA
1-PL-Piez-50	12/2/21	<923	NA	NA	NA	NA	NA
G-08	12/6/21	15900	NA	NA	NA	NA	NA
1-PL-Piez-44	12/6/21	2150	NA	NA	NA	NA	NA
1-PL-Piez-49	12/6/21	1800	ND	NA	NA	NA	NA
G-08	12/20/21	19300	NA	NA	NA	NA	NA
1-PL-Piez-44	12/20/21	1650	NA	NA	NA	NA	NA
1-PL-Piez-49	12/20/21	1230	ND	NA	NA	NA	NA

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