



March 1, 2023

L-2023-037
10 CFR 50.36a

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

RE: Turkey Point Nuclear Plant, Unit 3 and 4
Docket Nos. 50-250 and 50-251
Renewed Facility Operating Licenses DPR-31 and DPR-41

2022 Annual Radioactive Effluent Release Report

Pursuant to 10 CFR 50.36a(a)(2) and Technical Specification (TS) 6.9.1.4, enclosed is the 2022 Annual Radioactive Effluent Release Report for St. Lucie Units 1 and 2. The report provides information for the 12-month period beginning January 1, 2022 and ending December 31, 2022.

If you have any questions regarding this submittal, please contact Kenneth Mack at 561-904-3635.

Sincerely,

Dianne Strand

Dianne Strand
General Manager, Regulatory Affairs
Florida Power & Light Company

Enclosure: Annual Radioactive Effluent Release Report

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, St. Lucie Nuclear Plant
USNRC Resident Inspector, St. Lucie Nuclear Plant

ENCLOSURE

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

(48 pages follow)


Turkey Point Plant
Units 3 and 4

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

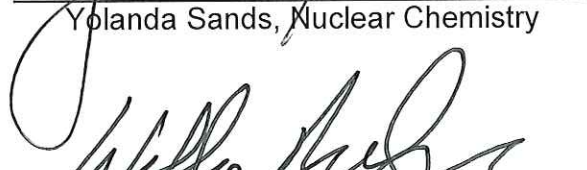
January 2022 through December 2022

Submitted by:

NUCLEAR CHEMISTRY DEPARTMENT
FLORIDA POWER AND LIGHT COMPANY



Yolanda Sands, Nuclear Chemistry



William Nurnberger, Nuclear Manager

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1.0 REGULATORY LIMITS

1.1 Liquid Effluent

- (a) The concentration of radioactive material released in liquid effluents to unrestricted areas shall not exceed ten times the concentration specified in 10CFR20 Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained gases. For dissolved or entrained noble gases, the concentration shall not exceed 2.0E-04 micro-curies per milliliter total activity.
- (b) The dose or dose commitment per reactor to a member of the public from any radioactive materials in liquid effluents released to unrestricted areas shall be limited as follows:
 - During any calendar quarter, to less than or equal to 1.5 mrem to the total body and less than or equal to 5 mrem to any organ.
 - During any calendar year, to less than or equal to 3.0 mrem to the total body and less than or equal to 10 mrem to any organ.

1.2 Gaseous Effluent

- (a) The dose rate due to radioactive materials released in gaseous effluent from the site to areas at and beyond the site boundary shall be limited to the following:
 - Less than or equal to 500 mrem per year to the total body and less than or equal to 3000 mrem per year to the skin due to noble gases.
 - Less than or equal to 1500 mrem per year to any organ due to Iodine 131 (I-131), Iodine 133 (I-133), tritium (H-3), and for all radioactive materials in particulate form with half-lives greater than 8 days.
- (b) The air dose per reactor to areas at and beyond the site boundary due to noble gases released in gaseous effluents shall be limited to:
 - During any calendar quarter, to less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation.
 - During any calendar year, to less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.
- (c) The dose per reactor to a member of the public, due to I-131, I-133, H-3, Carbon-14 (C-14) and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluent released to areas at and beyond the site boundary shall not exceed 7.5 mrem to any organ during any

calendar quarter and shall not exceed 15 mrem to any organ during any calendar year. C-14 dose was calculated using the guidance of Regulatory Guide 1.109, Calculations of Annual Doses to Man from Routine Releases of Reactor Effluents for the purpose of Evaluation Compliance with 10 CFR Part 50, Appendix I, Rev1, Oct 1977.

2.0 EFFLUENT CONCENTRATION

Water : In accordance with 10 CFR 20, Appendix B, Table 2, Column 2, and for entrained or dissolved noble gases as described in 1.1 of this report.

Air : Release concentrations are limited to dose rate limits described in 1.2 of this report.

3.0 AVERAGE ENERGY

The average energy of fission and activation gases in effluents is not applicable.

4.0 MEASUREMENTS AND APPROXIMATIONS OF TOTAL ACTIVITY

All liquid and airborne discharges to the environment during this period were analyzed in accordance with Technical Specification requirements as stated in the Offsite Dose Calculation Manual (ODCM). The minimum frequency of analysis as required by Regulatory Guide 1.21 was met or exceeded.

4.1 Liquid Effluents

Aliquots of representative pre-release samples, from the waste disposal system, were isotopically analyzed for gamma-emitting isotopes on a multichannel analyzer.

Frequent periodic sampling and analysis were used to determine if radioactivity was being released via the steam generator blowdown system and the storm drain system. Environmental sampling is performed in accordance with the ODCM and corporate policy.

Monthly and quarterly composite samples for the waste disposal system were prepared to give proportional weight to each liquid release made during the designated period of accumulation. The monthly composite was analyzed for tritium and gross alpha radioactivity. Tritium was determined by use of liquid scintillation techniques, and gross alpha radioactivity was determined by use of a solid-state scintillation system. The quarterly composite was analyzed for strontium 89 (Sr-89), strontium 90 (Sr-90), nickel 63 (Ni-63), and iron 55 (Fe-55) by chemical separation. Canal Evaporation dose calculations were done in accordance with the ODCM Section 2.0 Radioactive Liquid Effluents (p. 2-35).

All radioactivity concentrations determined from sample analysis of a pre-release composite were multiplied by the total represented volume of the liquid waste released to determine the total quantity of each isotope and of gross alpha activity released during the compositing period.

Aliquots of representative samples from the waste disposal system were analyzed on a pre-release basis by gamma spectral analysis. The resulting isotope concentrations were multiplied by the total volume released in order to estimate the total dissolved gases released.

The liquid waste treatment system is shared by both units at the site and generally, all liquid releases are allocated on a 50/50 basis to each unit respectively.

4.2 Gaseous Effluents

Airborne releases to the atmosphere occurred from the following sources:

- Gas Decay Tanks
- Containment Purges
- RWST via vent line
- U3 and U4 Equipment hatch during outages
- Releases incidental to operation of the plant
- Canal Evaporation Releases

The techniques employed in determining the radioactivity in airborne releases are:

- a) Gamma spectral analysis for fission and activation gases,
- b) Removal of particulate material by filtration and subsequent gamma spectral analysis, Sr-89, Sr-90 determination, and gross alpha determination,
- c) Absorption of halogen radionuclides on a charcoal filter and subsequent gamma spectral analysis.
- d) Analysis of water vapor in a gas sample for tritium using liquid scintillation techniques.
- e) C-14 curies were calculated using the guidance of "Estimation of C-14 in Nuclear Power Plant Gaseous Effluents", TR 1021106, EPRI, Palo Alto, CA: 2010

Both units share portions of the liquid and gaseous waste treatment system and generally, all treated waste from each reactor are allocated on 50/50 ratio. Meteorological data for the period January 2022 through december 2022, in the form Frequency Distribution Tables, are maintained on-site.

4.3 Estimation of Errors

a) Sampling Error

The error associated with volume measurement devices, flow measuring devices, etc., based on calibration data and design tolerances has been conservatively estimated to be collectively less than $\pm 10\%$.

b) Analytical Error

Our Q.C. Cross-Check Program involves counting unknown samples provided by an independent external lab. The errors associated with our analysis of these unknown samples, reported to us by the independent lab, were used as the basis for deriving the following analytical error terms:

<u>NUCLIDE TYPE</u>	<u>ERROR</u>	<u>MAXIMUM ERROR</u>
Liquid	$\pm 2.59\%$	$\pm 7.52\%$
Gaseous	$\pm 3.31\%$	$\pm 6.92\%$

5.0 BATCH RELEASES

See attached Open Effluent Management Software report.

6.0 UNPLANNED RELEASES

6.1 Liquid Release Occurrences

AR (02433824): Unplanned Release; Water was observed flowing from an open valve, 3-713G, 3A CCW Heat Exchanger Vent. This corresponded with the lowering of the 3CCW Head Tank Level. The valve was closed isolating the vent flow by the SNPO after obtaining Control Room concurrence. U3 CCW was sampled 8/8/22 @ 0424 and indicated Na-24 at $1.76E-7$ uCi/mL and a concentration of H-3 at $4.78E-5$ uCi/mL. The water from 3-713G, 3A Heat Exchanger Vent, was not captured and allowed to flow to a floor drain which leads out to the North East Storm drain. Total curies from unplanned liquid release was conservatively $4.78E-11$ curies. See table 6A.

6.2 Gaseous Release Occurrences

There were no unplanned gaseous release occurrences.

7.0 **REACTOR COOLANT ACTIVITY**

7.1 Unit 3

Reactor coolant activity limits of 0.25 $\mu\text{Ci}/\text{gram}$ Dose Equivalent I-131 and 447.7 $\mu\text{Ci}/\text{gram}$ Dose Equivalent Xenon (Xe-133) were not exceeded during this reporting period.

7.2 Unit 4

Reactor coolant activity limits of 0.25 $\mu\text{Ci}/\text{gram}$ Dose Equivalent I-131 and 447.7 $\mu\text{Ci}/\text{gram}$ Dose Equivalent Xe-133 were not exceeded during this reporting period.

8.0 **SITE RADIATION DOSE**

The assessment of radiation dose from radioactive effluents to the general public due to their activities inside the site boundary assumes a visitor was at the child development center/fitness center for ten hours a day, five days each week for fifty weeks of the year, receiving exposure from both Unit 3 and Unit 4 at Turkey Point. The child development center/fitness center is located approximately 1.75 miles WNW of the plant. Specific activities used in these calculations are the sum of the activities listed in the attached Unit 3 and Unit 4 Reg. Guide 1.21 tables. All dose to the public where a fraction of the limits and dose were maintained as low as reasonably achievable. The total calculated off-site dose to the public is summarized in the following Table A-5 per EPA 40 CFR 190 "Individual in the Unrestricted Area."

9.0 OFFSITE DOSE CALCULATION MANUAL (ODCM) REVISIONS

The ODCM was revised in 2022 a complete copy is attached.

10.0 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

No irradiated fuel shipments or irradiated component shipments were made from the site. Common solid waste from Turkey Point Units 3 and 4 was shipped jointly. A summation of these shipments is given in Table 6 of this report.

11.0 PROCESS CONTROL PROGRAM REVISIONS

There were no revisions to the Process Control Program during this reporting period.

12.0 INOPERABLE EFFLUENT MONITORING INSTRUMENTATION

01/05/22 (AR 02415299): R-3-19, Unit 3 Steam Generator Liquid Sample Monitor, failed on 12/06/21 at 1733. On 01/05/22, the monitor was declared out of service for more than 30 days.

09/27/22 (AR 02438074): U3 Spent Fuel Pool SPING ventilation was rendered non-functional after being shut down in accordance with 0-OP-060, Auxiliary Building HVAC section 6.1, Shutdown of Unit 3 Spent Fuel Pit Ventilation to support cable termination of RAD-3-6418 on 3-ONLINE 3-067-4DP88.

Design Change (EC 287982): Unit 3 Spent Fuel Pool SPING Rad Monitor Replacement

Design Change (EC 280922): Plant Vent SPING Rad Monitor Replacement

Design Change (EC 291559): U3 & U4 R-11/12 Rad Monitor Replacement

13.0 GROUND WATER SAMPLING

In 2022 as part of the procedural requirements on Groundwater Protection Program, wells on site and adjacent to the site were sampled for tritium. The H-3 results were from less than MDA to 3980 picocuries per liter. Selected wells which met the criteria stipulated in the ODCM were analyzed for hard to detect beta emitters (Fe-59, Ni-63, Sr-89/90) and alpha. All results were less than the limits of the Offsite Dose Calculation Manual, Table 5.1-2, Reporting Levels for Radioactivity Concentrations in Environmental Samples. The results are reported in the Annual Radiological Environmental Operating Report.

14.0 ERRATA DATA

None.

Unit 3 Reg. Guide 1.21 Tables:

1. **Table A-1: Gaseous Effluents – Summation of all Releases-**
2. **Table A-1E: Gaseous Effluents – Mixed Mode Release – Batch Mode**
3. **Table A-1F: Gaseous Effluents – Mixed Mode Release – Continuous Mode**
4. **Table A-2: Liquid Effluents – Summation of all Releases**
5. **Table A-2A: Liquid Effluents – Batch Mode**
6. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Dose to a Member of the Public due to Liquid Release**
7. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Air Dose Due to Gaseous Releases**
8. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Dose due to Radioiodines, Tritium, and Particulates in Gaseous Releases**
9. **Table A-5. EPA 40 CFR Part 190 Individual in the Unrestricted Area**
10. **Table 5A and 5B: Liquid and Gas Batch Release Summary**
11. **Table 6A and 6B: Liquid and Gas Abnormal Release Summary**

Only tables that pertain to mixed mode release are included. Unit 3 does not have ground level or elevated releases therefore, tables A-1A, 1B, 1C, 1D are not included.

Florida Power & Light Co., Turkey Point Nuclear
Annual Radioactive Effluent Release Report

Table A-1, Gaseous Effluents - Summation of All Releases

Unit: 3

January 2022 through December 2022

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
1. Total Release	Ci	1.17E-02	5.06E-03	0.00E+00	1.31E-03	1.81E-02
2. Average Release Rate for Period	uCi/s	1.50E-03	6.43E-04	0.00E+00	1.65E-04	5.73E-04
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
B. Iodines and Halogens						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/s	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
C. Particulates						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/s	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
D. Tritium						
1. Total Release	Ci	5.22E-01	0.00E+00	8.87E-02	0.00E+00	6.11E-01
2. Average Release Rate for Period	uCi/s	6.72E-02	0.00E+00	1.12E-02	0.00E+00	1.94E-02
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
E. Gross Alpha						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
1. Total Release	Ci	1.77E+00	1.81E+00	1.85E+00	1.85E+00	7.28E+00
2. Average Release Rate for Period	uCi/s	2.28E-01	2.30E-01	2.33E-01	2.33E-01	2.31E-01
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A

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Table A-1E, Gaseous Effluents - Mixed Mode Release - Batch Mode

Unit: 3

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
Ar-41	Ci	0.00E+00	2.73E-06	0.00E+00	0.00E+00	2.73E-06
Xe-131m	Ci	4.32E-05	0.00E+00	0.00E+00	0.00E+00	4.32E-05
Xe-133m	Ci	2.07E-04	0.00E+00	0.00E+00	0.00E+00	2.07E-04
Xe-133	Ci	1.14E-02	5.05E-03	0.00E+00	1.31E-03	1.78E-02
Xe-135	Ci	5.85E-05	3.44E-06	0.00E+00	0.00E+00	6.19E-05
Total For Period	Ci	1.17E-02	5.06E-03	0.00E+00	1.31E-03	1.81E-02
B. Iodines and Halogens						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Tritium						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Gross Alpha						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Table A-1F, Gaseous Effluents - Mixed Mode Release - Continuous Mode

Unit: 3

January 2022 through December 2022

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
B. Iodines and Halogens						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Tritium						
H-3	Ci	5.22E-01	0.00E+00	8.87E-02	0.00E+00	6.11E-01
E. Gross Alpha						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
C-14	Ci	1.77E+00	1.81E+00	1.85E+00	1.85E+00	7.28E+00

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Table A-2, Liquid Effluents - Summation of All Releases

Unit: 3

January 2022 through December 2022

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Products						
1. Total Release	Ci	9.43E-03	2.99E-02	6.53E-04	8.01E-05	4.01E-02
2. Average Concentration	uCi/mL	7.76E-10	3.22E-09	2.26E-10	2.10E-11	1.43E-09
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
B. Tritium						
1. Total Release	Ci	2.06E+02	5.84E+01	1.78E+01	1.09E+02	3.91E+02
2. Average Concentration	uCi/mL	1.69E-05	6.28E-06	6.15E-06	2.86E-05	1.39E-05
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
D. Gross Alpha Activity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Liquid Release Volume						
1. Total Release	Liters	7.27E+05	5.51E+05	1.60E+05	2.24E+05	1.66E+06
F. Dilution Volume						
1. Total Release	Liters	1.21E+10	9.30E+09	2.89E+09	3.81E+09	2.81E+10
G. Average Stream Flow						
1. Total Release	m ³ /s	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Table A-2A, Liquid Effluents - Batch Mode

Unit: 3

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Products						
Cr-51	Ci	2.50E-03	7.53E-04	0.00E+00	0.00E+00	3.25E-03
Mn-54	Ci	0.00E+00	8.41E-07	1.36E-06	0.00E+00	2.20E-06
Fe-55	Ci	2.17E-03	6.22E-04	0.00E+00	0.00E+00	2.79E-03
Fe-59	Ci	5.85E-04	3.88E-05	0.00E+00	0.00E+00	6.24E-04
Co-58	Ci	2.07E-03	2.86E-03	2.24E-04	6.66E-07	5.15E-03
Co-60	Ci	1.01E-04	6.55E-05	1.24E-05	0.00E+00	1.79E-04
Ni-63	Ci	4.83E-04	1.79E-02	1.15E-04	4.56E-05	1.85E-02
Zn-65	Ci	0.00E+00	2.44E-06	2.07E-06	0.00E+00	4.50E-06
Sr-89	Ci	0.00E+00	0.00E+00	1.86E-06	0.00E+00	1.86E-06
Sr-90	Ci	2.78E-06	1.11E-05	3.21E-07	1.79E-06	1.60E-05
Zr-95	Ci	3.50E-05	2.89E-06	0.00E+00	0.00E+00	3.79E-05
Nb-95	Ci	8.64E-05	0.00E+00	0.00E+00	0.00E+00	8.64E-05
Nb-97	Ci	2.76E-06	0.00E+00	0.00E+00	0.00E+00	2.76E-06
Ag-110m	Ci	4.89E-05	1.03E-05	0.00E+00	0.00E+00	5.92E-05
Sn-113	Ci	9.69E-06	0.00E+00	0.00E+00	0.00E+00	9.69E-06
Sn-117m	Ci	3.68E-05	5.73E-06	0.00E+00	0.00E+00	4.25E-05
Sb-122	Ci	5.92E-06	2.50E-06	0.00E+00	0.00E+00	8.42E-06
Sb-124	Ci	1.65E-04	9.68E-04	1.09E-05	0.00E+00	1.14E-03
Sb-125	Ci	6.68E-04	5.59E-03	2.79E-04	3.21E-05	6.57E-03
Te-129	Ci	3.06E-04	2.04E-04	0.00E+00	0.00E+00	5.10E-04
Te-132	Ci	3.95E-06	0.00E+00	0.00E+00	0.00E+00	3.95E-06
Cs-137	Ci	1.48E-04	9.05E-04	6.00E-06	0.00E+00	1.06E-03
Cs-138	Ci	0.00E+00	1.14E-05	0.00E+00	0.00E+00	1.14E-05
Total For Period	Ci	9.43E-03	2.99E-02	6.53E-04	8.01E-05	4.01E-02

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Table A-2A, Liquid Effluents - Batch Mode

Unit: 3

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
B. Tritium						
H-3	Ci	2.06E+02	5.84E+01	1.78E+01	1.09E+02	3.91E+02
C. Dissolved and Entrained Gases						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Gross Alpha Activity						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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**TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses to a member of the public due to Liquid Releases**

Unit: 3

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Liver	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Total Body	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	1.500	1.500	1.500	1.500	3.000
Percent of Limit	%	0.001	0.003	0.000	0.000	0.002
Thyroid	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Kidney	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Lung	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
GI-Lli	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001

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TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I

Doses to a member of the public due to Liquid Releases

Unit: 3

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Skin	mRem	1.44E-05	5.61E-05	2.35E-06	1.62E-07	7.30E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001

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TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I

Air Doses Due To Gaseous Releases

Unit: 3

January 2022 through December 2022

NG Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Gamma Air	mRad	1.71E-07	7.36E-08	0.00E+00	1.88E-08	2.63E-07
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	5.10E-07	2.18E-07	0.00E+00	5.65E-08	7.84E-07
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	1.44E-07	6.24E-08	0.00E+00	1.59E-08	2.23E-07
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	3.47E-07	1.46E-07	0.00E+00	3.75E-08	5.31E-07
Limit	mRem					
Percent of Limit	%					

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TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: 3

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	2.51E-02	2.57E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.334	0.342	0.349	0.349	0.688
Liver	mRem	2.51E-02	2.56E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.335	0.342	0.349	0.349	0.688
Total Body	mRem	2.51E-02	2.56E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	2.51E-02	2.56E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.335	0.342	0.349	0.349	0.688
Kidney	mRem	4.74E-03	4.82E-03	4.93E-03	4.92E-03	1.94E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.063	0.064	0.066	0.066	0.129
Lung	mRem	2.51E-02	2.56E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.335	0.342	0.349	0.349	0.688
GI-Lli	mRem	2.51E-02	2.56E-02	2.62E-02	2.62E-02	1.03E-01
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.335	0.342	0.349	0.349	0.688

Table A-5. EPA 40 CFR Part 190 Individual in the Unrestricted Area

	Total Dose	Visitor Dose	Limit	Total Dose	Visitor Dose
	(mrem)	(mrem)	(mrem)	Percent of Limit (%)	Percent of Limit (%)
Bone (mrem)	1.97E-01	1.68E-01	25	7.88E-01	6.72E-01
Liver (mrem)	1.97E-01	1.68E-01	25	7.88E-01	6.72E-01
Thyroid (mrem)	1.97E-01	1.68E-01	75	2.63E-01	2.24E-01
Kidney (mrem)	3.70E-02	3.16E-02	25	1.48E-01	1.26E-01
Lung (mrem)	1.97E-01	1.68E-01	25	7.88E-01	6.72E-01
GI-LLI (mrem)	1.97E-01	1.68E-01	25	7.88E-01	6.72E-01
Skin (mrem)	3.09E-06	2.64E-06	25	1.24E-05	1.05E-05
Total Body (mrem)	1.97E-01	1.68E-01	25	7.88E-01	6.72E-01
Gamma Air Dose (mrad)	5.26E-07	8.89E-08	10	5.26E-06	8.89E-07
Beta Air Dose (mrad)	1.57E-07	2.65E-07	20	7.85E-07	1.33E-06
Noble Gas Total Body Air Dose (mrad)	4.46E-07	7.54E-08	500	8.92E-08	1.51E-08
Noble Gas Skin Air Dose (mrad)	1.06E-06	1.79E-07	3000	3.53E-08	5.97E-09

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Table 5A and 5B - Liquid and Gas Batch Release Summary

Unit: 3

January 2022 through December 2022

A. Liquid Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		57	45	13	17	132
2. Total duration of batch releases	min	5.42E+03	4.17E+03	1.22E+03	1.72E+03	1.25E+04
3. Maximum batch release duration	min	1.10E+02	1.20E+02	1.10E+02	1.20E+02	1.20E+02
4. Average batch release duration	min	9.52E+01	9.26E+01	9.40E+01	1.01E+02	9.50E+01
5. Minimum batch release duration	min	5.00E+01	6.00E+01	7.30E+01	8.50E+01	5.00E+01
B. Gas Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		2	20	1	3	26
2. Total duration of batch releases	min	5.70E+01	6.65E+02	1.70E+01	8.60E+01	8.25E+02
3. Maximum batch release duration	min	3.20E+01	6.00E+01	1.70E+01	4.00E+01	6.00E+01
4. Average batch release duration	min	2.85E+01	3.33E+01	1.70E+01	2.87E+01	3.17E+01
5. Minimum batch release duration	min	2.50E+01	2.50E+01	1.70E+01	2.00E+01	1.70E+01

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Table 6A and 6B - Liquid and Gas Abnormal Release Summary

Unit: 3

January 2022 through December 2022

A. Liquid Abnormal Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Abnormal Releases		0	0	1	0	1
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	4.78E-11	0.00E+00	4.78E-11
B. Gas Abnormal Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Unit 4 Reg. Guide 1.21 Tables:

1. **Table A-1: Gaseous Effluents – Summation of all Releases**
2. **Table A-1E: Gaseous Effluents – Mixed Mode Release – Batch Mode**
3. **Table A-1F: Gaseous Effluents – Mixed Mode Release – Continuous Mode**
4. **Table A-2: Liquid Effluents – Summation of all Releases**
5. **Table A-2A: Liquid Effluents – Batch Mode**
6. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Dose to a member of the public due to Liquid Release**
7. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Air Dose Due to Gaseous Releases**
8. **Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Dose due to Radioiodines, Tritium, and Particulates in Gaseous Releases**
9. **Liquid and Gas Batch Release Summary**
10. **Table 6: Liquid and Gas Abnormal Release Summary**

Only tables that pertain to mixed mode release are included. Unit 4 does not have ground level or elevated releases therefore, tables A-1A, 1B, 1C, 1D are not included.

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Table A-1, Gaseous Effluents - Summation of All Releases

Unit: 4

January 2022 through December 2022

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
1. Total Release	Ci	1.17E-02	5.06E-03	0.00E+00	1.31E-03	1.81E-02
2. Average Release Rate for Period	uCi/s	1.50E-03	6.43E-04	0.00E+00	1.65E-04	5.73E-04
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
B. Iodines and Halogens						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/s	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
C. Particulates						
1. Total Release	Ci	9.41E-06	1.94E-05	0.00E+00	0.00E+00	2.88E-05
2. Average Release Rate for Period	uCi/s	1.21E-06	2.47E-06	0.00E+00	0.00E+00	9.13E-07
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
D. Tritium						
1. Total Release	Ci	4.20E-01	0.00E+00	0.00E+00	0.00E+00	4.20E-01
2. Average Release Rate for Period	uCi/s	5.40E-02	0.00E+00	0.00E+00	0.00E+00	1.33E-02
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
E. Gross Alpha						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
1. Total Release	Ci	1.37E+00	1.57E+00	1.85E+00	1.81E+00	6.59E+00
2. Average Release Rate for Period	uCi/s	1.76E-01	2.00E-01	2.33E-01	2.28E-01	2.09E-01
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A

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Table A-1E, Gaseous Effluents - Mixed Mode Release - Batch Mode

Unit: 4

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
Ar-41	Ci	0.00E+00	2.73E-06	0.00E+00	0.00E+00	2.73E-06
Xe-131m	Ci	4.32E-05	0.00E+00	0.00E+00	0.00E+00	4.32E-05
Xe-133m	Ci	2.07E-04	0.00E+00	0.00E+00	0.00E+00	2.07E-04
Xe-133	Ci	1.14E-02	5.05E-03	0.00E+00	1.31E-03	1.78E-02
Xe-135	Ci	5.85E-05	3.44E-06	0.00E+00	0.00E+00	6.19E-05
Total For Period	Ci	1.17E-02	5.06E-03	0.00E+00	1.31E-03	1.81E-02
B. Iodines and Halogens						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates						
Co-58	Ci	8.73E-06	7.34E-06	0.00E+00	0.00E+00	1.61E-05
Co-60	Ci	4.47E-07	5.42E-07	0.00E+00	0.00E+00	9.90E-07
Zr-95	Ci	0.00E+00	4.95E-06	0.00E+00	0.00E+00	4.95E-06
Nb-95	Ci	2.35E-07	6.55E-06	0.00E+00	0.00E+00	6.78E-06
Total For Period	Ci	9.41E-06	1.94E-05	0.00E+00	0.00E+00	2.88E-05
D. Tritium						
H-3	Ci	1.28E-01	0.00E+00	0.00E+00	0.00E+00	1.28E-01
E. Gross Alpha						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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

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Table A-1F, Gaseous Effluents - Mixed Mode Release - Continuous Mode

Unit: 4

January 2022 through December 2022

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Gases						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
B. Iodines and Halogens						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Tritium						
H-3	Ci	2.92E-01	0.00E+00	0.00E+00	0.00E+00	2.92E-01
E. Gross Alpha						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
F. Carbon-14						
C-14	Ci	1.37E+00	1.57E+00	1.85E+00	1.81E+00	6.59E+00

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Table A-2, Liquid Effluents - Summation of All Releases

Unit: 4

January 2022 through December 2022

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Products						
1. Total Release	Ci	9.43E-03	2.99E-02	6.53E-04	8.01E-05	4.01E-02
2. Average Concentration	uCi/mL	7.76E-10	3.22E-09	2.26E-10	2.10E-11	1.43E-09
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
B. Tritium						
1. Total Release	Ci	2.06E+02	5.84E+01	1.78E+01	1.09E+02	3.91E+02
2. Average Concentration	uCi/mL	1.69E-05	6.28E-06	6.15E-06	2.86E-05	1.39E-05
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Percent of Limit	%	N/A	N/A	N/A	N/A	N/A
D. Gross Alpha Activity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Liquid Release Volume						
1. Total Release	Liters	7.27E+05	5.51E+05	1.60E+05	2.24E+05	1.66E+06
F. Dilution Volume						
1. Total Release	Liters	1.21E+10	9.30E+09	2.89E+09	3.81E+09	2.81E+10
G. Average Stream Flow						
1. Total Release	m ³ /s	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Table A-2A, Liquid Effluents - Batch Mode

Unit: 4

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
A. Fission and Activation Products						
Cr-51	Ci	2.50E-03	7.53E-04	0.00E+00	0.00E+00	3.25E-03
Mn-54	Ci	0.00E+00	8.41E-07	1.36E-06	0.00E+00	2.20E-06
Fe-55	Ci	2.17E-03	6.22E-04	0.00E+00	0.00E+00	2.79E-03
Fe-59	Ci	5.85E-04	3.88E-05	0.00E+00	0.00E+00	6.24E-04
Co-58	Ci	2.07E-03	2.86E-03	2.24E-04	6.66E-07	5.15E-03
Co-60	Ci	1.01E-04	6.55E-05	1.24E-05	0.00E+00	1.79E-04
Ni-63	Ci	4.83E-04	1.79E-02	1.15E-04	4.56E-05	1.85E-02
Zn-65	Ci	0.00E+00	2.44E-06	2.07E-06	0.00E+00	4.50E-06
Sr-89	Ci	0.00E+00	0.00E+00	1.86E-06	0.00E+00	1.86E-06
Sr-90	Ci	2.78E-06	1.11E-05	3.21E-07	1.79E-06	1.60E-05
Zr-95	Ci	3.50E-05	2.89E-06	0.00E+00	0.00E+00	3.79E-05
Nb-95	Ci	8.64E-05	0.00E+00	0.00E+00	0.00E+00	8.64E-05
Nb-97	Ci	2.76E-06	0.00E+00	0.00E+00	0.00E+00	2.76E-06
Ag-110m	Ci	4.89E-05	1.03E-05	0.00E+00	0.00E+00	5.92E-05
Sn-113	Ci	9.69E-06	0.00E+00	0.00E+00	0.00E+00	9.69E-06
Sn-117m	Ci	3.68E-05	5.73E-06	0.00E+00	0.00E+00	4.25E-05
Sb-122	Ci	5.92E-06	2.50E-06	0.00E+00	0.00E+00	8.42E-06
Sb-124	Ci	1.65E-04	9.68E-04	1.09E-05	0.00E+00	1.14E-03
Sb-125	Ci	6.68E-04	5.59E-03	2.79E-04	3.21E-05	6.57E-03
Te-129	Ci	3.06E-04	2.04E-04	0.00E+00	0.00E+00	5.10E-04
Te-132	Ci	3.95E-06	0.00E+00	0.00E+00	0.00E+00	3.95E-06
Cs-137	Ci	1.48E-04	9.05E-04	6.00E-06	0.00E+00	1.06E-03
Cs-138	Ci	0.00E+00	1.14E-05	0.00E+00	0.00E+00	1.14E-05
Total For Period	Ci	9.43E-03	2.99E-02	6.53E-04	8.01E-05	4.01E-02

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Table A-2A, Liquid Effluents - Batch Mode

Unit: 4

January 2022 through December 2022

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
B. Tritium						
H-3	Ci	2.06E+02	5.84E+01	1.78E+01	1.09E+02	3.91E+02
C. Dissolved and Entrained Gases						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Gross Alpha Activity						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses to a member of the public due to Liquid Releases

Unit: 4

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Liver	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Total Body	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	1.500	1.500	1.500	1.500	3.000
Percent of Limit	%	0.001	0.003	0.000	0.000	0.002
Thyroid	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Kidney	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
Lung	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001
GI-Lli	mRem	1.24E-05	4.89E-05	2.05E-06	1.44E-07	6.35E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001

Florida Power & Light Co., Turkey Point Nuclear

Annual Radioactive Effluent Release Report

TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I

Doses to a member of the public due to Liquid Releases

Unit: 4

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Skin	mRem	1.44E-05	5.61E-05	2.35E-06	1.62E-07	7.30E-05
Limit	mRem	5.000	5.000	5.000	5.000	10.000
Percent of Limit	%	0.000	0.001	0.000	0.000	0.001

Florida Power & Light Co., Turkey Point Nuclear
Annual Radioactive Effluent Release Report

TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I

Air Doses Due To Gaseous Releases

Unit: 4

January 2022 through December 2022

NG Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Gamma Air	mRad	1.71E-07	7.36E-08	0.00E+00	1.88E-08	2.63E-07
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	5.10E-07	2.18E-07	0.00E+00	5.65E-08	7.84E-07
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	1.44E-07	6.24E-08	0.00E+00	1.59E-08	2.23E-07
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	3.47E-07	1.46E-07	0.00E+00	3.75E-08	5.31E-07
Limit	mRem					
Percent of Limit	%					

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TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: 4

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.259	0.297	0.349	0.342	0.623
Liver	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.259	0.296	0.349	0.342	0.623
Total Body	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.259	0.296	0.349	0.342	0.623
Kidney	mRem	3.67E-03	4.18E-03	4.92E-03	4.82E-03	1.76E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.049	0.056	0.066	0.064	0.117
Lung	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.259	0.296	0.349	0.342	0.623
GI-Lli	mRem	1.94E-02	2.22E-02	2.62E-02	2.56E-02	9.35E-02
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.259	0.296	0.349	0.342	0.623

Florida Power & Light Co., Turkey Point Nuclear

Annual Radioactive Effluent Release Report

TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: 4

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Skin	mRem	1.30E-06	1.79E-06	0.00E+00	0.00E+00	3.09E-06
Limit	mRem	7.500	7.500	7.500	7.500	15.000
Percent of Limit	%	0.000	0.000	0.000	0.000	0.000

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Annual Radioactive Effluent Report

Table 5A and 5B - Liquid and Gas Batch Release Summary

Unit: 4

January 2022 through December 2022

A. Liquid Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		57	45	13	17	132
2. Total duration of batch releases	min	5.42E+03	4.17E+03	1.22E+03	1.72E+03	1.25E+04
3. Maximum batch release duration	min	1.10E+02	1.20E+02	1.10E+02	1.20E+02	1.20E+02
4. Average batch release duration	min	9.52E+01	9.26E+01	9.40E+01	1.01E+02	9.50E+01
5. Minimum batch release duration	min	5.00E+01	6.00E+01	7.30E+01	8.50E+01	5.00E+01
B. Gas Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		20	32	1	3	56
2. Total duration of batch releases	min	2.19E+04	7.50E+03	1.70E+01	8.60E+01	2.95E+04
3. Maximum batch release duration	min	1.30E+04	1.04E+03	1.70E+01	4.00E+01	1.30E+04
4. Average batch release duration	min	1.09E+03	2.34E+02	1.70E+01	2.87E+01	5.27E+02
5. Minimum batch release duration	min	2.50E+01	2.50E+01	1.70E+01	2.00E+01	1.70E+01

Florida Power & Light Co., Turkey Point Nuclear

Annual Radioactive Effluent Report

Table 6A and 6B - Liquid and Gas Abnormal Release Summary

Unit: 4

January 2022 through December 2022

A. Liquid Abnormal Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
B. Gas Abnormal Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Site Dose Reg. Guide 1.21 Tables:

Canal Reuse/Return tritium

Only tables that pertain to site ground mode release are included. Unit 3 and Unit 4 combine their effluent to the canal system. The tables for continuous release from evaporation from the canal are considered ground releases are included.

- 1. Table A-1B: Gaseous Effluents – Ground Level Release --Return – Continuous Mode**
- 2. Table A-4: Dose Assessments 10 CFR Part 50, Appendix I: Dose due to Radioiodines, Tritium, and Particulates in Gaseous Releases**

**Reg. Guide 1.21, Table A-1B, Gaseous Effluents - Canal Return/Re-Use
Ground Level Continuous Mode**

**Unit: Site
January-2022 thru December-2022**

Nuclides Released	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Gases</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>B. Iodines and Halogens</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>C. Particulates</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Tritium</u>						
H-3	Ci	6.09E+01	1.04E+02	2.34E+01	1.41E+01	2.03E+02
<u>E. Gross Alpha</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>F. Carbon-14</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE A-4: Dose Assessments 10 CFR Part 50, Appendix I
Doses due to Tritium Return From Closed Cooling Canal Evaporation**

Unit: Site

January 2022 through December 2022

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Liver	mRem	3.22E-03	5.51E-03	1.24E-03	7.45E-04	1.07E-02
Limit	mRem	5	5	5	5	10
Percent of Limit	%	6.44E-02	1.10E-01	2.50E-02	1.50E-02	1.07E-01
Thyroid	mRem	3.22E-03	5.51E-03	1.24E-03	7.45E-04	1.07E-02
Limit	mRem	5	5	5	5	10
Percent of Limit	%	6.44E-02	1.10E-01	2.50E-02	1.50E-02	1.07E-01
Kidney	mRem	3.22E-03	5.51E-03	1.24E-03	7.45E-04	1.07E-02
Limit	mRem	5	5	5	5	10
Percent of Limit	%	6.44E-02	1.10E-01	2.50E-02	1.50E-02	1.07E-01
Lung	mRem	3.22E-03	5.51E-03	1.24E-03	7.45E-04	1.07E-02
Limit	mRem	5	5	5	5	10
Percent of Limit	%	6.44E-02	1.10E-01	2.50E-02	1.50E-02	1.07E-01
Gi-LLI	mRem	3.22E-03	5.51E-03	1.24E-03	7.45E-04	1.07E-02
Limit	mRem	5	5	5	5	10
Percent of Limit	%	6.44E-02	1.10E-01	2.50E-02	1.50E-02	1.07E-01

TABLE 6

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS



NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2022 to 12/31/2022

Percent Cutoff: 1.0%

Dry Active Waste

Waste Class A

Nuclide Name	Abundance	Activity (Ci)
Fe-55	47.83%	4.11E-01
Co-58	4.47%	3.84E-02
Co-60	9.43%	8.10E-02
Ni-63	33.21%	2.85E-01
Nb-95	1.13%	9.72E-03
Sb-125	1.02%	8.80E-03

Total Combined

Nuclide Name	Abundance	Activity (Ci)
Fe-55	47.83%	4.11E-01
Co-58	4.47%	3.84E-02
Co-60	9.43%	8.10E-02
Ni-63	33.21%	2.85E-01
Nb-95	1.13%	9.72E-03
Sb-125	1.02%	8.80E-03

Other Waste

Waste Class A

Nuclide Name	Abundance	Activity (Ci)
Fe-55	54.96%	1.92E-02
Co-58	6.06%	2.11E-03
Co-60	10.59%	3.70E-03
Ni-63	24.83%	8.67E-03

Total Combined

Nuclide Name	Abundance	Activity (Ci)
Fe-55	54.96%	1.92E-02
Co-58	6.06%	2.11E-03
Co-60	10.59%	3.70E-03
Ni-63	24.83%	8.67E-03

Sum of All 4 Categories

Waste Class A

Nuclide Name	Abundance	Activity (Ci)
Fe-55	48.1%	4.30E-01



NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2022 to 12/31/2022

Percent Cutoff: 1.0%

Co-58	4.53%	4.05E-02
Co-60	9.47%	8.47E-02
Ni-63	32.88%	2.94E-01
Nb-95	1.12%	1.00E-02
Sb-125	1.01%	9.00E-03
Total Combined		
Nuclide Name	Abundance	Activity (Ci)
Fe-55	48.1%	4.30E-01
Co-58	4.53%	4.05E-02
Co-60	9.47%	8.47E-02
Ni-63	32.88%	2.94E-01
Nb-95	1.12%	1.00E-02
Sb-125	1.01%	9.00E-03



NRC Regulatory Guide 1.21 Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream

During Period From: 01/01/2022 to 12/31/2022

Resins, Filters, And Evaporator Bottoms			
Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	0.00E+00	0.00E+00	0.00E+00
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	0.00E+00	0.00E+00	0.00E+00
Major Nuclides for the Above Table:			

Dry Active Waste (DAW)			
Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	1.33E+04	3.76E+02	8.59E-01
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	1.33E+04	3.76E+02	8.59E-01
Major Nuclides for the Above Table: H-3, C-14, Mn-54, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Sr-90, Zr-95, Nb-94, Nb-95, Tc-99, Ag-110m, Sb-125, I-129, Cs-137, Pu-238, Pu-239, Pu-241, Am-241, Cm-242, Cm-243			

Irradiated Components			
Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	0.00E+00	0.00E+00	0.00E+00
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	0.00E+00	0.00E+00	0.00E+00
Major Nuclides for the Above Table:			

Other Waste			
Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	3.50E+03	9.92E+01	3.49E-02
B	0.00E+00	0.00E+00	0.00E+00



NRC Regulatory Guide 1.21 Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Waste Class and Stream

During Period From: 01/01/2022 to 12/31/2022

C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	3.50E+03	9.92E+01	3.49E-02

Major Nuclides for the Above Table:

H-3, C-14, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Sr-90, Nb-94, Nb-95, Tc-99, I-129, Cs-137, Pu-238, Pu-239, Pu-241, Am-241, Cm-242, Cm-243

Sum Of All Low-Level Waste Shipped From Site

Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	1.68E+04	4.75E+02	8.94E-01
B	0.00E+00	0.00E+00	0.00E+00
C	0.00E+00	0.00E+00	0.00E+00
Unclassified	0.00E+00	0.00E+00	0.00E+00
All	1.68E+04	4.75E+02	8.94E-01

Major Nuclides for the Above Table:

H-3, C-14, Mn-54, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Sr-90, Zr-95, Nb-94, Nb-95, Tc-99, Ag-110m, Sb-125, I-129, Cs-137, Pu-238, Pu-239, Pu-241, Am-241, Cm-242, Cm-243



Report date: 1/31/2023

Solid Waste Shipped Offsite for Disposal

During Period from: 1/1/2022 to 12/31/2022

Shipment Date	Manifest ID	Destination	Package Name	Category Name	NRC Class	DOT Type
3/3/2022	PTN-W-22-001	Energy Solutions Gallaher Road Facility	ESUU101067	Dry Active Waste	A	Limited Quantity
3/3/2022	PTN-W-22-002	Energy Solutions Gallaher Road Facility	ESUU200889	Dry Active Waste	A	Limited Quantity
			ESUU202021	Dry Active Waste	A	Limited Quantity
3/30/2022	0847-05-0001	EnergySolutions LLC.	ESUU200644	Dry Active Waste	A	A LSA-II
3/30/2022	0847-04-0004	EnergySolutions LLC.	ESUU200980	Dry Active Waste	A	A LSA-II
4/18/2022	PTN-W-22-005	Energy Solutions Bear Creek Road Fac.	ESUU200819	Dry Active Waste	A	A LSA-II
			ESUU200556	Dry Active Waste	A	A LSA-II
4/21/2022	PTN-W-22-006	Energy Solutions Bear Creek Road Fac.	ESUU200425	Dry Active Waste	A	A LSA-II
			ESUU200845	Dry Active Waste	A	A LSA-II
4/27/2022	PTN-W-22-007	Energy Solutions Bear Creek Road Fac.	ESUU200829	Dry Active Waste	A	A LSA-II
			ESUU200499	Dry Active Waste	A	A LSA-II
5/6/2022	PTN-W-22-008	Energy Solutions Gallaher Road Facility	ESUU100362	Dry Active Waste	A	Limited Quantity
8/18/2022	PTN-W-22-009	Energy Solutions Gallaher Road Facility	PTNOIL-1	Other Waste	A	A LSA-II
			ESUU200378	Dry Active Waste	A	A LSA-II
10/13/2022	PTN-W-22-010	Energy Solutions Bear Creek Road Fac.	ESUU200943	Dry Active Waste	A	Limited Quantity
			ESUU200704	Dry Active Waste	A	Limited Quantity



Solid Waste Shipped Offsite for Disposal

During Period from: 1/1/2022 to 12/31/2022

11/2/2022	PTN-W-22-012	Energy Solutions Gallaher Road Facility	ESUU100720	Other Waste	A	Limited Quantity
11/2/2022	PTN-W-22-011	Energy Solutions Gallaher Road Facility	ESUU200354	Other Waste	A	Limited Quantity
			ESUU200686	Other Waste	A	Limited Quantity
12/5/2022	PTN-W-22-013	Energy Solutions Bear Creek Road Fac.	ESUU200827	Dry Active Waste	A	Limited Quantity
			ESUU300167A	Dry Active Waste	A	Limited Quantity



Total Shipments by Carrier

Number of Shipments per each carrier

Number of Shipments	Mode of Transportation	Destination
5	Hittman Transport	Energy Solutions Bear Creek Road Fac. 1560 Bear Creek Road
5	Hittman Transport	Energy Solutions Gallaher Road Facility 628 Gallaher Road
2	Hittman Transport	EnergySolutions LLC. Clive Disposal Site - Bulk Waste Facility
1	Landstar	Energy Solutions Gallaher Road Facility 628 Gallaher Road

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