RADIOACTIVE EFFLUENT RELEASE DATA

JULY 1981 THROUGH DECEMBER 1981

SUBMITTED BY

NUCLEAR CHEMISTRY DEPARTMENT

TURKEY POINT PLANT

FLORIDA POWER & LIGHT COMPANY

ER

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SEMIANNUAL REPORT OF RADIOACTIVE EFFLUENT RELEASES, PTP UNITS 3 & 4 7/81 - 12/81

Introduction

All liquid and airborne discharges to the environment during this reporting period were analyzed in accordance with Technical Specification requirements. The minimum frequency of analysis as required by Safety Guide 21 was met or exceeded.

Liquid Releases

Aliquots of representative pre-release samples were either isotopically analyzed for gamma emitting isotopes on a multichannel analyzer, or evaporated and analyzed for gross beta-gamma activity in a 2π gas flow proportional counter. The efficiency of the gas flow proportional counter is adjusted so that the activity determined by gross beta-gamma analysis approximates the isotopic activities determined by gamma spectrum analysis and selected beta determinations, exclusive of tritium and dissolved gases.

The above procedure was followed for all releases from the waste disposal system and for secondary system batch releases. Frequent periodic sampling and analysis were used to conservatively estimate the quantity of radioactivity released via the steam generator blowdown system.

The following comments will aid in the interpretation and evaluation of the liquid release data presented in Table I, pages 1 through 7.

1. The reported values in Table I, page 1, include in their computation the quantity of radioactivity released from both the waste disposal system and the secondary system. The secondary system releases occurred when contaminated water was blown down from the steam generators during primary to secondary leakage conditions, or when the generators were drained for repair or refueling. Activity that entered the plant storm drain system was also included in the secondary system activity released and in the total activity released.

2. The reported values in Table I, pages 2 and 3 are the total quantities of radioactivity for individual nuclides released from the waste disposal system and the secondary system together. The values in Table I, pages 4 and 5 are for the waste disposal system only and page 6 is for the secondary system only.

3. During primary to secondary leakage, release of several short-lived nuclides from the secondary system occurs. These short-lived nuclides are not generally detected in batch released from the waste disposal system due to the long holdup time of processed water. Only those isotopes that were detected in the secondary system releases were reported. All non-detectable isotopes are listed as (--).

4. Weekly and monthly 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 composites were analyzed for gamma emmitting isotopes on a multichannel analyzer attached to a high resolution Ge(Li) detector, and for Sr-89 and Sr-90, using a chemical separation and subsequent beta determination with a 2π gas flow proportional counter. Tritium was determined by use of liquid scintillation techniques and gross alpha radioactivity was determined by use of a 2π gas flow proportional counter. All concentrations for radioactivity determined from analysis of a 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.

5. At least one representative batch of liquid effluent from the waste disposal system was analyzed monthly for dissolved fission and activation gases by use of gamma spectrum analysis. The resulting isotope concentrations were multiplied by the total volume released for the month in order to estimate the

total dissolved gases released. If more than one batch of effluent was analyzed, the concentrations were weighted in an appropriate manner. The results are totaled on a monthly basis in Table I, page 7. Dissolved gases, if any, from secondary system releases were determined from the samples of the individual releases. Isotopic concentrations were multiplied by the volume released to determine the quantity of radiogas nuclides released.

6. Representative samples of secondary system batch releases were analyzed individually for gamma emitting isotopes. Analysis of a representative composite for tritium was made for releases which occurred due to primary to secondary leakage.

7. The applicable limit for release of radioactive material in liquid waste is five curies per quarter excluding tritium and dissolved gases.

Airborne Releases

Airborne releases to the atmosphere occurred from: release of gas decay tanks, the instrument bleedline, containment purges, and the secondary system during conditions of primary to secondary leakage. The techniques employed in determining the radioactivity in airborne releases are:

a) Gamma spectrum analysis for fission and activation gases,

b) Removal of particulate material by filtration and subsequent gamma-spectrum analysis, Sr-89-90 determination, gross alpha analysis, and gross beta-gamma analysis,

c) Absorption of halogen radionuclides on a charcoal filter and subsequent gamma-spectrum analysis, and

d) Condensation of water vapor in a gas sample followed by analysis for tritium using liquid scintillation techniques.

All sporadic gas releases from the plant which were not accounted for by the above methods were conservatively estimated as curies of Xe-133 equivalent by use of the plant vent process monitor recorder chart and the current calibration curve for the monitor.

The maximum rated capacity for the hogging jets and the maximum measured flow rate for the condenser air ejectors, and an estimate of the rate of exhaust from the atmoshperic dumps were used to conservatively estimate the airborne releases from the secondary system whenever applicable.

The following comments will aid in the interpretation and evaluation of the airborne release data presented in Table II.

1. Calculation of total radioactivity of noble gases, I-131, and particulates is based upon detectable radionuclides only.
2. The applicable limit for release of total radioactive materials in gaseous waste is 0.012 Ci/sec when averaged over the calendar quarter. The percent of the applicable limit for total gaseous release was computed as follows:

$$\% \text{ of Limit} = \frac{\text{Total curies released in gaseous waste during quarter} \times 100\%}{(.012 \text{ Ci/sec})\ (\text{Seconds in quarter})}$$

3. The applicable limit for the release of I-131 and particulate radionuclides with half-lives greater than eight days in airborne waste is:

$$\Sigma \frac{Q_i}{MPC_i} \leq 10{,}000 \frac{m^3}{sec}$$

where Q_i = release rate of i^{th} nuclide, Ci/sec and MPC_i = maximum permissible concentration of the i^{th} nuclide, Ci/m^3

The release rate, Q_i, was determined by dividing the total activity released in Ci, for the i^{th} nuclide ($t_{1/2} > 8d$), during the calendar quarter by the seconds in the quarter.

MPC_i values were obtained from 10CFR20, Appendix B, Table II, Column 1. The MPC chosen was the most conservative value of either the soluble or insoluble MPC for each isotope.

The percent of applicable limit was determined as follows:

$$\% \text{ of Limit} = \frac{\Sigma \frac{Q_i}{MPC_i} \times 100\%}{10{,}000 \text{ m}^3 / \text{sec}}$$

4. The maximum gaseous release rate for each month is listed in Table II, page 1, under Section A, Line 3. The applicable limit for maximum allowable release rate is 6.7 E+04 µCi/sec, average over one hour.

5. All values reported in Table II, pages 2 and 3, include the particulate, gaseous, and halogen activity released from the containments during purging, auxiliary building (leakage from pumps, valves, etc), the gas waste disposal system and the secondary system during conditions of primary to secondary system leakage. If a minimum detectable activity value was not calculated for an isotope, it will be listed as (---).

TABLE I
Report of Radioactive Effluents: Liquid

		July	August	September	October	November	December
A. Gross Radioactivity (β-γ)							
1. Total Release	(mCi)	1.90 E+01	1.68 E+01	8.89 E+00	1.76 E+01	3.94 E+01	1.04 E+02
2. Avg Concentration During Releases	(μCi/ml)	1.2 E-10	8.0 E-11	4.9 E-11	1.3 E-10	3.8 E-10	5.6 E-10
3. Avg Concentration for Month	(μCi/ml)	1.1 E-10	7.6 E-11	4.9 E-11	1.1 E-10	3.8 E-10	5.6 E-10
4. Max Concentration Released	(μCi/ml)	2.6 E-09	2.4 E-09	7.9 E-10	6.8 E-09	1.5 E-08	2.8 E-08
5. Percent of Technical Specification Limit for Total Activity Released	(%)		8.9 E-01			3.2 E+00	
B. Tritium							
1. Total Release	(Ci)	6.47 E+01	3.47 E+01	2.57 E+01	8.31 E+00	5.30 E+00	3.30 E+01
2. Avg Concentration During Releases	(μCi/ml)	4.2 E-07	1.7 E-07	1.4 E-07	6.2 E-08	5.0 E-08	1.8 E-07
3. Avg Concentration for Month	(μCi/ml)	3.6 E-07	1.6 E-07	1.4 E-07	5.3 E-08	5.0 E-08	1.8 E-07
C. Dissolved Noble Gas							
1. Total Release	(mCi)	1.1 E+00	4.62 E+00	1.99 E-01	1.63 E+00	(<4.7 E-08)	(<2.1 E-07)
2. Avg Concentration During Releases	(μCi/ml)	6.9 E-12	2.3 E-11	1.1 E-12	1.2 E-11	(<4.5 E-19)	(<1.1 E-18)
3. Avg Concentration for Month	(μCi/ml)	6.0 E-12	2.1 E-11	1.1 E-12	1.0 E-11	(<4.5 E-19)	(<1.1 E-18)
D. Gross Alpha Radioactivity							
1. Total Release	(mCi)	(<4.6 E-09)	(<4.6 E-09)	(<8.6 E-09)	2.07 E-02	(<1.5 E-08)	(<2.6 E-08)
2. Avg Concentration During Releases	(μCi/ml)	(<3.0 E-20)	(<2.2 E-20)	(<4.7 E-20)	1.6 E-13	(<1.4 E-19)	(<1.4 E-19)
3. Avg Concentration for Month	(μCi/ml)	(<2.6 E-20)	(<2.1 E-20)	(<4.7 E-20)	1.3 E-13	(<1.4 E-19)	(<1.4 E-19)
E. Volumes							
1. Vol of Liquid Waste to Discharge	(Liters)	1.27 E+07	2.40 E+07	1.35 E+07	9.56 E+06	6.45 E+06	1.73 E+07
2. Vol of Dilution Water During Rel.	(Liters)	1.55 E+11	2.05 E+11	1.83 E+11	1.33 E+11	1.05 E+11	1.85 E+11
3. Vol of Dilution Water for Month	(Liters)	1.79 E+11	2.18 E+11	1.83 E+11	1.58 E+11	1.05 E+11	1.85 E+11

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I

Report of Radioactive Effluents: Liquid - Total

Isotope	Unit	July	August	September	October	November	December
Ag-110m	mCi	(<5.9 E-08)	(<5.3 E-08)	(<3.7 E-08)	(<4.7 E-08)	1.37 E-01	1.73 E+00
Ba-140	mCi	(<2.8 E-07)	(<3.0 E-07)	(<1.6 E-07)	(<3.0 E-07)	(<3.9 E-07)	(<6.7 E-
Co-57	mCi	(<2.9 E-08)	(<3.2 E-08)	(<1.8 E-08)	(<2.8 E-08)	1.4 E-02	(<6.6 E-08)
Co-58	mCi	1.54 E+00	6.85 E-01	3.22 E-01	2.49 E+00	1.39 E+01	3.68 E+
Co-60	mCi	4.77 E+00	3.39 E+00	2.54 E+00	3.82 E+00	6.17 E+00	1.01 E+01
Cr-51	mCi	(<4.2 E-07)	(<4.2 E-07)	(<2.5 E-07)	(<4.2 E-07)	3.15 E+00	1.42 E+01
Cs-134	mCi	1.66 E+00	1.81 E+00	9.4 E-01	3.38 E+00	5.79 E+00	5.46 E+00
Cs-136	mCi	4.39 E-02	2.23 E-02	(<6.7 E-08)	(<6.8 E-08)	(<8.8 E-08)	3.7 E-02
Cs-137	mCi	3.14 E+00	2.68 E+00	1.56 E+00	4.30 E+00	7.97 E+00	7.73 E+00
F -18	mCi	2.05 E+00	1.39 E+00	3.94 E-01	5.74 E-01	----	3.73 E-01
Fe-59	mCi	1.61 E-01	(<1.0 E-07)	(<8.2 E-08)	(<9.8 E-08)	9.0 E-02	1.05 E+00
I -131	mCi	1.66 E+00	3.46 E+00	9.23 E-01	1.25 E+00	(<8.4 E-08)	2.62 E+
I -132	mCi	8.7 E-01	2.47 E-01	1.93 E-01	1.51 E-01	----	----
I -133	mCi	1.30 E+00	2.38 E+00	1.54 E+00	1.33 E+00	----	1.15 E+00
I -134	mCi	2.64 E-01	----	----	----	----	----
I- 135	mCi	5.28 E-01	----	----	----	----	1.42 E-01
La-140	mCi	2.66 E-01	(<4.1 E-07)	(<1.3 E-07)	(<1.8 E-07)	(<1.2 E-07)	(<5.1 E-08)
Mn-54	mCi	1.72 E-01	9.86 E-02	1.77 E-02	1.05 E-01	7.02 E-01	8.51 E-01

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I
Report of Radioactive Effluents: Liquid - Total (Continued)

Isotope	Unit	July	August	September	October	November	December
Na-24	mCi	2.87 E-01	----	----	7.9 E-02	----	2.26 E-01
Nb-95	mCi	8.22 E-02	3.31 E-02	(<3.9 E-08)	(<5.0 E-08)	6.0 E-01	2.54 E[illegible]
Sb-124	mCi	3.01 E-02	(<5.2 E-08)	(<3.3 E-08)	(<4.7 E-08)	1.71 E-01	4.19 E+00
Sb-125	mCi	(<1.5 E-07)	(<1.7 E-07)	(<9.1 E-08)	(<1.4 E-07)	(<1.8 E-08)	1.11 E+01
Sr-89	mCi	1.39 E-01	5.8 E-01	4.6 E-01	1.46 E-01	6.1 E-02	1.8 E+00
Sr-90	mCi	1.19 E-02	7.1 E-03	(<6.5 E-09)	(<5.4 E-09)	(<5.0 E-09)	(<5.6 E-09)
Zn-65	mCi	(<1.1 E-07)	(<1.1 E-07)	(<8.4 E-08)	(<9.3 E-08)	2.38 E-01	(<2.2 E-07)
Zr-95	mCi	(<8.1 E-08)	(<7.6 E-08)	(<6.2 E-08)	(<8.3 E-08)	3.93 E-01	8.80 E-01
Zr-97	mCi	----	----	----	----	----	1.01 E+00
Total	mCi	1.90 E+01	1.68 E+01	8.89 E+00	1.76 E+01	3.94 E+01	1.04 E+02

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I

Report of Radioactive Effluents: Liquid - Waste Disposal System

Isotope	Unit	July	August	September	October	November	December
Ag-110m	mCi	(<5.9 E-08)	(<5.3 E-08)	(<3.7 E-08)	(<4.7 E-08)	1.37 E-01	1.73 E+00
Ba-140	mCi	(<2.8 E-07)	(<3.0 E-07)	(<1.6 E-07)	(<3.0 E-07)	(<3.9 E-07)	(<6.7 [illegible])
Co-57	mCi	(<2.9 E-08)	(<3.2 E-08)	(<1.8 E-08)	(<2.8 E-08)	1.4 E-02	(<6.6 E-08)
Co-58	mCi	1.54 E+00	6.78 E-01	2.44 E-01	2.94 E+00	1.39 E+01	3.67 E+01
Co-60	mCi	2.43 E+00	1.80 E+00	1.36 E+00	2.12 E+00	5.95 E+00	9.03 E+00
Cr-51	mCi	(<4.2 E-07)	(<4.2 E-07)	(<2.5 E-07)	(<4.2 E-07)	3.15 E+00	1.42 E+01
Cs-134	mCi	8.01 E-01	7.46 E-01	1.60 E-01	5.68 E-01	1.04 E+00	1.24 E-01
Cs-136	mCi	4.39 E-02	2.23 E-02	(<6.7 E-08)	(<6.8 E-08)	(<8.8 E-08)	(<1.6 E-07)
Cs-137	mCi	1.73 E+00	1.17 E+00	3.55 E-01	8.39 E-01	1.60 E+00	4.28 E-01
Fe-59	mCi	1.61 E-01	(<1.0 E-07)	(<8.2 E-08)	(<9.8 E-08)	9.0 E-02	1.05 E+00
I -131	mCi	2.82 E-01	1.11 E-01	(<4.2 E-08)	2.8 E-02	(<8.4 E-08)	(<1.6 E-07)
La-140	mCi	2.66 E-01	(<4.1 E-07)	(<1.3 E-07)	(<1.8 E-07)	(<1.2 E-07)	(<5.1 [illegible])
Mn-54	mCi	1.72 E-01	9.86 E-02	1.77 E-02	1.05 E-01	7.02 E-01	8.51 E-01
Nb-95	mCi	8.22 E-02	3.19 E-02	(<3.9 E-08)	(<5.0 E-08)	6.0 E-01	2.54 [illegible]
Sb-124	mCi	3.01 E-02	(<5.2 E-08)	(<3.3 E-08)	(<4.7 E-08)	1.71 E-01	4.19 E+00
Sb-125	mCi	(<1.5 E-07)	(<1.7 E-07)	(<9.1 E-08)	(<1.4 E-07)	(<1.8 E-08)	1.11 E+01
Sr-89	mCi	1.39 E-01	2.6 E-01	2.3 E-01	(<6.3 E-09)	6.1 E-02	1.8 E+00
Sr-90	mCi	1.19 E-02	7.1 E-03	(<6.5 E-09)	(<5.4 E-09)	(<5.0 E-09)	(<5.6 E-09)

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I

Report of Radioactive Effluents: Liquid - Waste Disposal System (Continued)

Isotope	Unit	July	August	September	October	November	December
Zn-65	mCi	(<1.1 E-07)	(<1.1 E-07)	(<8.4 E-08)	(<9.3 E-08)	2.38 E-01	(<2.2 E-07)
Zr-95	mCi	(<8.1 E-08)	(<7.6 E-08)	(<6.2 E-08)	(<8.3 E-08)	3.93 E-01	8.8
Zr-97	mCi	----	----	----	----	----	1.01 E+00
Total	mCi	7.69 E+00	4.92 E+00	2.37 E+00	6.15 E+00	2.81 E+01	8.56 E+01

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I

Report of Radioactive Effluents: Liquid - Secondary System

Isotope	Unit	July	August	September	October	November	December
Co-58	mCi	----	7.2 E-03	7.8 E-02	----	8.5 E-03	1.1 E-01
Co-60	mCi	2.34 E+00	1.59 E+00	1.18 E+00	1.70 E+00	2.18 E-01	1.10 [illegible]
Cs-134	mCi	8.62 E-01	1.06 E+00	7.8 E-01	2.81 E+00	4.75 E+00	5.34 E+00
Cs-136	mCi	----	----	----	----	----	3.7 E-02
Cs-137	mCi	1.41 E+00	1.51 E+00	1.20 E+00	3.46 E+00	6.37 E+00	7.30 E+00
F-18	mCi	2.05 E+00	1.39 E+00	3.94 E+00	5.74 E-01	----	3.73 E-01
I-131	mCi	1.38 E+00	3.35 E+00	9.23 E-01	1.22 E+00	----	2.62 E+00
I-132	mCi	8.7 E-01	2.47 E-01	1.93 E-01	1.51 E-01	----	----
I-133	mCi	1.30 E+00	2.38 E+00	1.54 E+00	1.33 E+00	----	1.15 E+00
I-134	mCi	2.64 E-01	----	----	----	----	----
I-135	mCi	5.28 E-01	----	----	----	----	1.42 E-01
Mn-54	mCi	----	----	----	----	----	----
Na-24	mCi	2.87 E-01	----	----	7.9 E-02	----	2.26 E-01
Nb-95	mCi	----	1.2 E-03	----	----	----	----
Sr-89	mCi	----	3.2 E-01	2.3 E-01	1.46 E-01	----	----
Total	mCi	1.13 E+01	1.19 E+01	6.52 E+00	1.15 E+01	1.13 E+01	1.84 E+01

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE I

Report of Radioactive Effluents: Liquid - Dissolved Gas

Total		July	August	September	October	November	December
Kr-85	mCi	(<4.9 E-06)	(<5.6 E-06)	(<9.7 E-06)	(<5.1 E-06)	(<4.3 E-06)	(<4.5 E-05)
Xe-131m	mCi	(<5.3 E-07)	1.30 E+00	(<9.3 E-07)	(<5.5 E-07)	(<4.6 E-07)	(<3.2 E-06)
Xe-133	mCi	1.07 E+00	3.32 E+00	1.99 E-01	1.54 E+00	(<4.7 E-08)	(<2.1 E-07)
Xe-133m	mCi	(<1.3 E-07)	(<1.4 E-07)	(<2.6 E-07)	(<1.6 E-07)	(<1.2 E-07)	(<7.5 E-07)
Xe-135	mCi	(<1.8 E-08)	(<2.4 E-08)	(<4.2 E-08)	9.2 E-02	(<1.4 E-08)	(<9.5 E-08)
Waste Disposal System							
Kr-85	mCi	(<4.9 E-06)	(<5.6 E-06)	(<9.7 E-06)	(<5.1 E-06)	(<4.3 E-06)	(<4.5 E-05)
Xe-131m	mCi	(<5.3 E-07)	1.30 E+00	(<9.3 E-07)	(<5.5 E-07)	(<4.6 E-07)	(<3.2 E-06)
Xe-133	mCi	1.07 E+00	3.32 E+00	1.99 E-01	(<3.8 E-08)	(<4.7 E-08)	(<2.1 E-07)
Xe-133m	mCi	(<1.3 E-07)	(<1.4 E-07)	(<2.6 E-07)	(<1.6 E-07)	(<1.2 E-07)	(<7.5 E-07)
Xe-135	mCi	(<1.8 E-08)	(<2.4 E-08)	(<4.2 E-08)	(<1.9 E-08)	(<1.4 E-08)	(<9.5 E-08)
Secondary System							
Kr-85	mCi	----	----	----	----	----	----
Xe-131m	mCi	----	----	----	----	----	----
Xe-133	mCi	----	----	----	1.54 E+00	----	----
Xe-133m	mCi	----	----	----	----	----	----
Xe-135	mCi	----	----	----	9.2 E-02	----	----

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE II
Report of Radioactive Effluents: Airborne

		July	August	September	October	November	December
A. Fission and Activation Gases							
1. Total Release	(Ci)	4.13 E+02	2.55 E+02	1.34 E+02	8.56 E+02	3.87 E+02	3.03 E+02
2. Avg Release Rate for Period	(μCi/sec)	1.7 E+02	8.5 E+01	5.5 E+01	3.5 E+02	1.3 E+02	1.3 E+02
*3. Max Release Rate for Period	(μCi/sec)	3.0 E+04	2.3 E+04	1.3 E+04	1.7 E+04	5.6 E+02	2.1 E+03
B. Iodine - 131							
1. Total Iodine - 131	(Ci)	5.9 E-03	1.2 E-03	1.6 E-04	1.7 E-03	1.6 E-03	5.4 E-04
2. Avg Release Rate for Period	(μCi/sec)	2.4 E-03	4.0 E-04	6.6 E-05	7.0 E-04	5.3 E-04	2.2 E-04
C. Particulates							
1. Particulates (with $t_{1/2}$>8 days)	(Ci)	2.51 E-04	5.8 E-05	2.0 E-04	4.2 E-05	1.64 E-04	1.9 E-04
2. Avg Release Rate for Period	(μCi/sec)	1.0 E-04	1.9 E-05	8.3 E-05	1.7 E-05	5.4 E-05	7.9 E-05
3. Gross Alpha Radioactivity	(Ci)	1.7 E-09	7.4 E-09	(<2.5 E-12)	(<3.2 E-09)	1.4 E-08	1.2 E-08
D. Tritium							
1. Total Release	(Ci)	5.76 E-02	3.58 E-02	3.94 E-02	2.4 E-02	0.0 E+00	3.4 E-02
2. Avg Release Rate for Period	(μCi/sec)	2.38 E-02	1.2 E-02	1.6 E-02	9.9 E-03	0.0 E+00	1.4 E-02

E. Percent of Applicable Limit			
1. Fission and Activation Gases	(%)	8.5 E-01	1.6 E+00
2. I-131 and Part (t1/2>8d)	(%)	9.3 E-02	4.9 E-02

*Maximum airborne release rate averaged over one hour for each month. Technical Specifications limit is 6.7 E+04 μCi/sec averaged over one hour.

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE II
Airborne Releases - Particulates

Isotope	Unit	July	August	September	October	November	December
Ba-140	Ci	1.6 E-05	(<1.6 E-13)	(<2.0 E-13)	(<1.6 E-13)	(<1.5 E-13)	(<3.0 E-13)
Co-57	Ci	(<1.5 E-14)	(<1.6 E-14)	(<1.7 E-14)	(<1.4 E-14)	(<1.4 E-14)	1.1 [illegible]
Co-58	Ci	7.2 E-05	5.3 E-06	1.0 E-04	1.8 E-05	6.6 E-05	1.7 E-05
Co-60	Ci	5.1 E-05	3.5 E-05	8.5 E-05	1.2 E-05	4.4 E-05	1.4 E-04
Cr-51	Ci	(<2.4 E-13)	(<2.8 E-13)	(<2.4 E-13)	(<2.2 E-13)	9.4 E-06	(<4.2 E-13)
Cs-134	Ci	2.5 E-05	3.8 E-06	4.1 E-06	2.7 E-06	1.2 E-05	7.1 E-06
Cs-136	Ci	2.7 E-06	(<6.4 E-14)	(<8.5 E-14)	(<6.4 E-14)	(<6.4 E-14)	(<1.9 E-13)
Cs-137	Ci	3.7 E-05	1.3 E-05	7.0 E-06	6.1 E-06	2.4 E-05	2.1 E-05
I -131	Ci	1.6 E-05	9.6 E-07	(<3.3 E-14)	1.9 E-06	1.3 E-06	(<5.4 E-14)
La-140	Ci	1.3 E-05	(<5.4 E-14)	(<2.8 E-14)	(<3.4 E-14)	(<3.9 E-14)	(<6.9 E-14)
Mn-54	Ci	1.5 E-05	(<7.0 E-14)	1.1 E-06	(<4.8 E-14)	3.6 E-06	1.1 E-06
Nb-95	Ci	(<4.6 E-14)	(<5.5 E-14)	(<6.1 E-14)	(<4.3 E-14)	2.0 E-06	(<1.0 E-13)
Sr-89	Ci	2.9 E-06	1.9 E-07	1.8 E-07	1.3 E-06	1.2 E-06	1.5 E-06
Sr-90	Ci	1.4 E-07	3.1 E-08	1.2 E-08	7.0 E-08	4.8 E-08	1.6 [illegible]8
Total	Ci	2.51 E-04	5.8 E-05	2.0 E-04	4.2 E-05	1.64 E-04	1.9 E-04

NOTE: Numbers in parentheses represent maximum sensitivity in μCi/ml.

TABLE II
Airborne Releases - Gaseous

Fission and Activation Gases Isotope	Unit	July	August	September	October	November	December
Ar-41	Ci	1.63 E+01	4.14 E+00	4.87 E+00	6.86 E-01	----	1.6 E-01
Kr-85	Ci	6.8 E-02	1.76 E-01	(<9.0 E-05)	1.68 E-01	----	(<8.2 [illegible])
Kr-85m	Ci	5.93 E-02	1.44 E-01	7.8 E-02	3.78 E-02	----	1.1 E-02
Kr-87	Ci	(< 2.6 E-06)	(<1.0 E-05)	9.3 E-03	4.36 E-02	----	(<8.2 E-07)
Kr-88	Ci	3.22 E-02	1.38 E-01	6.14 E-02	(<9.7 E-06)	----	(<8.4 E-07)
Xe-131m	Ci	1.36 E+00	1.25 E+00	7.70 E-01	1.46 E+00	----	(<8.9 E-06)
Xe-133	Ci	3.93 E+02	2.45 E+02	1.26 E+02	8.52 E+02	3.87 E+02	3.02 E+02
Xe-133m	Ci	1.36 E+00	1.53 E+00	1.15 E+00	8.00 E-01	----	4.08 E-01
Xe-135	Ci	9.01 E-01	2.86 E+00	1.26 E+00	6.51 E-01	----	2.50 E-01
Xe-135m	Ci	2.44 E-02	7.78 E-02	8.2 E-02	5.95 E-02	----	(<3.2 E-06)
Xe-138	Ci	(<6.6 E-06)	(<4.2 E-05)	(<6.2 E-06)	(<1.7 E-05)	----	(<6.0 E-06)
Total	Ci	4.13 E+02	2.55 E+02	1.34 E+02	8.56 E+02	3.87 E+02	3.03 E+02

Halogens (Gaseous) Isotope	Unit	July	August	September	October	November	Dece[illegible]
I-131	Ci	5.9 E-03	1.2 E-03	1.6 E-04	1.7 E-03	1.6 E-03	5.4 E-04
I-133	Ci	1.1 E-03	4.6 E-04	1.9 E-04	1.4 E-03	(<4.3 E-14)	5.2 E-04
I-135	Ci	2.3 E-04	2.4 E-04	1.0 E-04	(<9.7 E-14)	(<1.9 E-13)	7.0 E-06
Br-82	Ci	6.6 E-04	5.2 E-04	1.7 E-04	4.8 E-04	(<6.8 E-14)	1.2 E-04
Total	Ci	7.9 E-03	2.4 E-03	6.2 E-04	3.6 E-03	1.6 E-03	1.19 E-03

Note: Numbers in parentheses represent maximum sensitivity in µCi/ml.

RADIOACTIVE WASTE REPORT

July 1, 1981, through December 31, 1981

DATE OF SHIPMENT	CURIES	CU. FT.	DISPOSITION
7/07/81	0.00124	525	Buried in Barnwell, S.C.
7/09/81	0.00105	532.5	" " Richland, Wa.
7/09/81	0.00800	517.5	" " " "
7/14/81	0.00641	525	" " Barnwell, S.C.
7/16/81	0.002485	540	" " Richland, Wa.
7/16/81	0.00129	540	" " " "
7/21/81	0.00927	525	" " Barnwell, S.C.
7/23/81	0.04716	765	" " Richland, Wa.
7/28/81	0.09351	1050	" " Barnwell, S.C.
7/30/81	0.04960	1050	" " Richland, Wa.
7/30/81	0.09188	1050	" " " "
8/04/81	0.10920	1050	" " Barnwell, S.C.
8/10/81	0.51455	170	" " " "
8/11/81	0.59200	150	" " " "
8/12/81	2.20000	170	" " " "
8/13/81	0.88400	170	" " " "
8/25/81	0.04072	1050	" " " "
8/28/81	2.38000	170	" " " "
9/14/81	0.13200	1050	" " " "
9/21/81	2.77000	200	" " " "
9/23/81	0.21000	170	" " " "
9/26/81	0.45600	170	" " " "
9/28/81	10.17000	200	" " " "
9/30/81	0.069195	1050	" " Richland, Wa.
9/30/81	0.18513	1050	" " " "
10/05/81	2.28000	170	" " Barnwell, S.C.
10/07/81	0.76100	170	" " " "
10/09/81	0.95200	170	" " " "
10/13/81	0.05990	1050	" " Richland, Wa.
10/13/81	1.23000	85	" " Barnwell, S.C.
10/15/81	1.38600	85	" " " "
10/19/81	1.08000	85	" " " "
10/20/81	0.06010	1050	" " Richland, Wa.
10/21/81	0.92400	85	" " Barnwell, S.C.
10/27/81	1.85000	200	" " " "
10/29/81	0.23398	1050	" " Richland, Wa.
11/04/81	0.174765	1050	" " Barnwell, S.C.
11/10/81	1.85000	200	" " " "
11/17/81	0.09200	200	" " " "
12/04/81	0.24600	1050	" " Richland, Wa.
12/08/81	0.19500	1050	" " Barnwell, S.C.
12/14/81	0.61600	85	" " " "
12/17/81	1.23200	85	" " " "
12/19/81	0.92400	85	" " " "
12/09/81	0.26870	1100	" " Richland, Wa.
12/10/81	0.25200	1050	" " " "
12/10/81	0.14800	1050	" " " "
12/29/81	0.17100	1050	" " " "
12/31/81	0.30640	1050	" " " "
49 Shipments	38.317	27,745	
On site as of January 1, 1982	5.376	3,148	

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT

TURKEY POINT UNITS 3 & 4

DOCKET NOS. 50-250, 251

DADE COUNTY, FLORIDA

7-1-81 TO 12-31-81

PREPARED 2/11/82

1. INTRODUCTION

This report is submitted pursuant to Section 6.9 of the Turkey Point Plant Units 3 & 4 Technical Specifications.

Radiological environmental surveillance for the Turkey Point Plant is conducted in accordance with Section 4.12 of the plant's Technical Specifications. A summary of the samples collected and analyses performed during the period July 1, 1981 through December 31, 1981 is provided in Table 1.

2. THE MONITORING PROGRAM

Period Covered: This report covers the period from July 1, 1981 through December 31, 1981.

Analytical Responsibility: Environmental radiological monitoring for the Turkey Point Plant is conducted by the State of Florida, Department of Health and Rehabilitative Services (DHRS). All samples are collected and analyzed by DHRS personnel.

Number of Samples: During the period, a total of 708 samples were collected from 35 different locations to be analyzed for radioactivity. Table 1 summarizes the highest, lowest and mean results for all sample locations and where applicable the highest, lowest and mean results for the control location and for sample locations which yielded the highest

mean levels. The values in Table 1 are based upon only those analyses which yielded detectable measurements. The numbers of samples which yielded detectable measurements compared to the total numbers of samples collected are also indicated.

Split-Sample: During the period July 1, 1981 - December 31, 1981, 12 samples were collected for comparative analysis by the DOE in accordance with the DHRS/DOE split-sampling program.

Missing Data: Sample results for Sr^{89}, Sr^{90} for several environmental sample media were not available to be included with this report. When received these results will be transmitted in a supplemental report. In addition, one direct radiation measurement, two precipitation samples, and the semi-annual small animal specimen were not obtained. Based upon the results that were obtained during this period, as well as the historical data for Turkey Point 3 & 4, the missing data is not expected to alter any of the conclusions of this report. More detailed information concerning delayed or missing data is contained in Table 1A.

Change in Sample Location: Due to repeated acts of vandalism, the sample station identified as Location T-57, Dolan's Farm, was moved approximately 200 yards to the southeast to a protected area. The NRC was notified prior to moving the sample station.

3. Discussion and Interpretation of Data

Air Monitoring: The trending graphs for this period show that the levels for gross beta particulates in air are down significantly from the levels which were reported during the previous two surveillance periods. Generally higher than normal levels for gross beta particulates in air were observed from November 1980 through May 1981. These observations were not a result of operation of the Turkey Point Nuclear units. The levels for gross beta particulates in air during this period are comparable to the levels considered normal for the local environment. There continues to be no measurable levels of I-131 in any of the air samples around the Turkey Point Plant.

Direct Radiation Monitoring: An anomolous exposure rate reading was obtained from the dosimeters (TLD's) located at the Florida City Substation (7 miles West) during the period 8/6/81 to 9/6/81. The reading which was obtained is considered to be approximately twice normal and is statistically above the mean value of all of the other dosimeter readings representing the same period. Upon finding the anomalous reading, a very sensitive gamma instrument was dispatched to the Florida City Substation. All readings were confirmed to be normal. Data on plant releases was reviewed along with other environmental surveillance data. It was concluded that the anomalous reading was not related to effluents from the Turkey Point nuclear units. At least two other feasible explanations were offered. These are as follows:

The TLD's might not have been zeroed prior to being deployed.

A radiation source may have temporarily been in the vicinity of the Florida City Substation long enough to influence the dosimeter reading.

Water Samples: During normal operations of the Turkey Point nuclear units, small quantities of radioactivity are periodically released into the closed facility cooling system. As a result tritium is detectable in cooling canal surface water samples. Because there is some ground water interchange, tritium may also be detectable in ground water monitoring wells located adjacent to the cooling canal system. As indicated in Table 1, the highest concentration measured during this surveillance period was a cooling canal system water sample. The tritium level was 5100 pCi/1. This level of tritium is equal to only 0.2% of the allowable limit for tritium in water in unrestricted areas. In fact, this amount of tritium is only about 25% of that allowable in drinking water. No other radioisotopes which could be attributed to the operation of the Turkey Point nuclear units were detected in water samples from the cooling canal system or environment surrounding the Turkey Point Plant.

Other Environmental Samples: As indicated in Table 1, detectable measurements for ^{60}Co were reported for the cooling canal bottom sediment samples and in a sample of sponge collected at Elliot Key (10 miles - NE). These levels are very low and are consistent with past measurements.

Measurements of radionuclides and/or radioactivity for all other environmental samples provided in Table 1 are consistent with levels which were measured during the preoperational environmental surveillance program.

4. Conclusions

Operation of the Turkey Point nuclear units is not contributing significantly to the presence or buildup of radioactivity in the environment around the Turkey Point Plant. Operation of the Turkey Point nuclear units is not contributing significantly to the exposure of any individual or population group or to any radiological consequence involving the health or safety of any individual or population group. The concentrations of any radionuclides reported in Table 1 are much less than that permitted for those radionuclides in unrestricted areas as provided in 10CFR20, Appendix B.

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

NAME OF FACILITY TURKEY POINT PLANT UNITS 3 & 4 DOCKET NO. 50-250, 251

LOCATION OF FACILITY DADE COUNTY FLORIDA REPORTING PERIOD JULY 1, 1981 - DECEMBER 31, 1981

Medium or Pathway Sampled	Unit	Analysis for	Number of			All Indicator Locations		Location with Highest Mean			Control[2] Location		No. of Nonroutine Reported Measurements
			Sites	Samples	Analyses	Mean[1]	Range[1]	Sample Location Distance & Direction	Mean[1]	Range[1]	Mean[1]	Range[1]	
1.1 AIR			8	432									
1. Particulates	pCi/m^3	Gross β		216[5]	216	.028 (216/216)	.006-.123	I58-Entrance Road on Site (1 Mile-WSW)	.031 (27/27)	.008-.123	.030 (27/27)	.012-.109	
2. Radioiodine	pCi/m^3	^{131}I		216[5]	216	ND	NA	NA	NA	NA	NA	NA	
1.2 DIRECT RADIATION			11	130[6]									
1. TLD	μ Rem/hr	Exposure Rate		130	130	4.7 (130/130)	2.3-9.2	T52-Fla City Sub-station (7 miles-W)	5.8 (6/6)	4.0-9.2	5.5 (6/6)	4.7-6.6	
1.3 PRECIPITATION			4	23[6]									
1. Rainwater	pCi/l	Gross β-DS			23	4.2 (8/23)	3.0-10.1	T52-Florida City Sub-station (7 Miles-W)	4.8 (4/6)	3.0-10.1	3.3 (2/4)	3.1-3.4	
"	"	Gross β-UDS			23	3.2 (1/23)	NA	T57-Dolan's Farm (4 Miles-NW)	3.2 (1/6)	NA	ND	NA	
"	"	Tritium			23	340 (2/23)	210-470	T52-Florida City Sub-station (7 Miles-W)	470 (1/6)	NA	ND	NA	
"	"	γ-emitting isotopes			23	ND[4]	NA	NA	NA	NA	NA	NA	

DS - Dissolved Solids UDS - Undissolved Solids ND - None Detectable NA - Not Applicable

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Medium or Pathway Sampled	Unit	Analysis for	Number of			All Indicator Locations		Location with Highest Mean			Control[2] Location		No. of Nonroutine Reported Measurements
			Sites	Samples	Analyses	Mean[1]	Range[1]	Sample Location Distance & Direction	Mean[1]	Range[1]	Mean[1]	Range[1]	
2.1 SURFACE WATERS			14	44									
1. Estuarine			10[5]	20									
Surface Water	pCi/l	Tritium			20	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{89}Sr			18[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			18[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	γ emmiting isotopes			20	ND[4]	NA	NA	NA	NA	NA	NA	
2. Cooling Canal			2	12									
Surface Water	pCi/l	Tritium			12	2560 (12/12)	1690-5100	T97-Loch Rosetta, Onsite (0 Miles-E)	2710 (6/6)	1810-5100	NA	NA	
" "	"	^{89}Sr			10[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			10[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	γ emitting isotopes			12	ND[4]	NA	NA	NA	NA	NA	NA	
3. Fresh Water Drainage Canals			2	12									
Surface Water	pCi/l	Gross β-DS			12	101	3.1-310 (12/12)	T75-Fla. City Canal at Old Salinity Dam, (1 Mile - WNW)	200 (6/6)	120-310	NA	NA	
" "	"	Gross β-UDS			12	ND	NA	NA	NA	NA	NA	NA	
" "	"	Tritium			12	490 (5/12)	280-720	T75-Fla. City Canal at Old Salinity Dam (1 Mile-WNW)	490 (5/6)	280-720	NA	NA	

TABLE 1

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LOCATION OF FACILITY DADE COUNTY FLORIDA REPORTING PERIOD JULY 1, 1981 - DECEMBER 31, 1981

Medium or Pathway Sampled	Unit	Analysis for	Number of			All Indicator Locations		Location with Highest Mean			Control[2] Location		No. of Nonroutin
			Sites	Samples	Analyses	Mean[1]	Range[1]	Sample Location Distance & Direction	Mean[1]	Range[1]	Mean[1]	Range[1]	Reported Measurement
2.2 WELLS			9	18									
1. Potable Well Water			3	6									
Drinking Water	pCi/l	Gross β-DS			6	7.3 (5/6)	4.4-13.0	T57-Dolan's Farm . (4 Miles-NW)	10.1 (2/2)	7.1-13.0	NA	NA	
"	"	Gross β-DS			6	ND	NA	NA	NA	NA	NA	NA	
"	"	Tritium			6	ND	NA	NA	NA	NA	NA	NA	
2. Ground Water			6	12									
Ground Water Wells	pCi/l	Tritium			12	1130 (7/12)	290-2600	T90-Groundwater Well E-20 (6 Miles -SSE)	2600 (1/2)	NA	NA	NA	
" "	"	^{89}Sr			12	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			12	ND	NA	NA	NA	NA	NA	NA	
" "	"	γ emitting isotopes			12	ND[4]	NA	NA	NA	NA	NA	NA	

TABLE 1

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Medium or Pathway Sampled	Unit	Analysis for	Number of			All Indicator Locations		Location with Highest Mean			Control[2] Location		No. of Nonroutine Reported Measurements
			Sites	Samples	Analyses	Mean[1]	Range[1]	Sample Location Distance & Direction	Mean[1]	Range[1]	Mean[1]	Range[1]	
3.0 BOTTOM SEDIMENTS			9	11									
1. Cooling Canal			2	4									
Bottom Sediments	pCi/kg	^{89}Sr			2[3]	ND	NA	NA	NA	NA	NA	NA	
"	"	^{90}Sr			2[3]	ND	NA	NA	NA	NA	NA	NA	
"		Y emitting isotopes			4								
"	"	1. ^{60}Co				310 (3/4)	90-580	T84-Cooling canal South of bridge (0 Miles - SW)	420 (2/2)	250-	NA	NA	
"	"	2. ^{95}Zr				230 (1/4)	NA	T85-Cooling canal West of 90° Bend (0 Miles - SW)	230 (1/2)	NA	NA	NA	
"	"	3. Others				ND[4]	NA	NA	NA	NA	NA	NA	
2. Estuarine			7	7									
Bottom Sediments	pCi/kg	^{89}Sr			7	ND	NA	NA	NA	NA	NA	NA	
"	"	^{90}Sr			7	ND	NA	NA	NA	NA	NA	NA	
"		Y emitting isotopes			7								
	"	1. ^{95}Zr				70 (2/7)	60-70	I69-Elliott Key (7 Miles-ESE)	70 (1/1)	NA	NA	NA	
	"	2. Others				ND[4]	NA	NA	NA	NA	NA	NA	

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LOCATION OF FACILITY DADE COUNTY FLORIDA REPORTING PERIOD JULY 1, 1981 - DECEMBER 31, 1981

Medium or Pathway Sampled	Unit	Analysis for	Number of Sites	Number of Samples	Number of Analyses	All Indicator Locations Mean[1]	All Indicator Locations Range[1]	Location with Highest Mean Sample Location Distance & Direction	Location with Highest Mean Mean[1]	Location with Highest Mean Range[1]	Control[2] Location Mean[1]	Control[2] Location Range[1]	No. of Nonroutine Reported Measurements
4.0 AQUATIC BIOTA			9	33									
1. Crustacea			6	7									
(Blue Crab, Horseshoe Crab)	pCi/kg	^{89}Sr			6[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			6[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	γ Emitting isotopes			7	ND[4]	NA	NA	NA	NA	NA	NA	
2. Fish, Carnivore			7	8[5]									
(Mixed Species)	pCi/kg	^{89}Sr			0[3]	NA	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			0[3]	NA	NA	NA	NA	NA	NA	NA	
" "	"	γ emitting isotopes			8								
	"	1. ^{137}Cs				50 (1/6)	NA	NA	NA	NA	NA	NA	
	"	2. Others				ND[4]	NA	NA	NA	NA	NA	NA	
3. Fish, Herbivore			6	6									
(Mullet)	pCi/kg	^{89}Sr			6	ND	NA	NA	NA	NA	NA	NA	
"	"	^{90}Sr			6	ND	NA	NA	NA	NA	NA	NA	
"	"	γ emitting isotopes			6	ND[4]	NA	NA	NA	NA	NA	NA	

TABLE 1

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Medium or Pathway Sampled	Unit	Analysis for	Number of			All Indicator Locations		Location with Highest Mean			Control[2] Location		No. of Nonroutine Reported Measurements
			Sites	Samples	Analyses	Mean[1]	Range[1]	Sample Location Distance & Direction	Mean[1]	Range[1]	Mean[1]	Range[1]	
4. Turtle Grass			6	6									
Turtle Grass	pCi/kg	^{89}Sr			5[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			5[3]	ND	NA	NA	NA	NA	NA	NA	
" "		γ emitting isotopes			6								
	"	1. ^{95}Zr				240 (5/6)	130-320	T59-Elliott Key (10 Miles-NE)	320 (1/1)	NA	NA	NA	
	"	2. Others				ND[4]	NA	NA	NA	NA	NA	NA	
5. Sponges			6	6									
Sponge		γ emitting isotopes			6								
	pCi/kg	1. ^{95}Zr				860 (5/6)	70-1500	T94-Pumpkin Key (8 Miles-SSE)	1500 (1/1)	NA	NA	NA	
	"	2. ^{144}Ce				3600 (1/6)	NA	T59-Elliott Key (10 Miles-NE)	3600 (1/1)	NA	NA	NA	
	"	3. ^{60}Co				70 (1/6)	NA	T59-Elliott Key (10 Miles-NE)	70 (1/1)	NA	NA	NA	
	"	4. ^{106}Ru				550 (3/6)	360-590	T93-Pelican Bank (1.5 Miles-E)	590 (1/1)	NA	NA	NA	
	"	5. Others				ND[4]	NA	NA	NA	NA	NA	NA	

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Medium or Pathway Sampled	Unit	Analysis for	Number of Sites	Number of Samples	Number of Analyses	All Indicator Locations Mean[1]	All Indicator Locations Range[1]	Location with Highest Mean Sample Location Distance & Direction	Location with Highest Mean Mean[1]	Location with Highest Mean Range[1]	Control[2] Location Mean[1]	Control[2] Location Range[1]	No. of Nonroutine Reported Measurements
5.0 TERRESTRIAL			12	17									
1. Small Animal			1	0[6]	NA	NA	NA	NA	NA	NA	NA	NA	
2. Food Crops (Corn, Potatoes)	pCi/kg	^{89}Sr	3	3	1[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			1[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	γ emitting isotopes			3	ND[4]	NA	NA	NA	NA	NA	NA	
3. Vegetation (Mangrove Leaves)	pCi/kg	^{89}Sr	7	7	4[3]	ND	NA	NA	NA	NA	NA	NA	
" "	"	^{90}Sr			4[3]	ND	NA	NA	NA	NA	NA	NA	
" "		γ emitting isotopes			7								
	"	1. ^{95}Zr				190 (5/7)	110-270	T64-Natoma Substation (22 Miles-N) Control Sample Location	270 (1/1)	NA	270 (1/1)	NA	
	"	2. Others				ND[4]	NA	NA	NA	NA	NA	NA	
4. Ground Samples Soil	pCi/kg	^{89}Sr	7	7	6[3]	ND	NA	NA	NA	NA	NA	NA	
"	"	^{90}Sr			6[3]	ND	NA	NA	NA	NA	NA	NA	
		γ emitting isotopes			7								
		1. ^{137}Cs				170 (5/7)	80-290	T56-Princeton Substation(8 Miles-WNW)	290 (1/1)	NA	ND	NA	
		2. ^{95}Zr				260 (2/7)	220-290	T56-Princeton Substation(8 Miles-WNW)	290 (1/1)	NA	ND	NA	
		3. Others				ND[4]	NA	NA	NA	NA	NA	NA	

TABLE 1 NOTES

1. Mean and Range values based upon data with detectable results only.

   Numbers in parentheses indicate the ratio of analyses which yielded detectable results to the total number of analyses performed for that medium.

2. Control location - T64, Florida Power & Light Company - Natoma Substation (22 Miles - N)

3. Some analyses incomplete - Refer to Table 1A.

4. Excluding Potassium - 40 (^{40}K), Radon - 226 (^{226}Ra) and Thorium - 232 (^{232}Th) which are naturally occurring radioisotopes detectable in many environmental specimens.

5. Does not include split samples analyzed by DOE.

6. Refer to Table 1A for explanation of missing data.

TABLE 1 A

Radiological Environmental Monitoring Report

Delayed or Missing Data

I. Delayed Results

Due to incomplete analyses, results for the following ^{89}Sr, ^{90}Sr samples could not be included in this report.

	Medium or Pathway Sampled	Analysis For	Location/Date	Reason for Delay
1.	Surface Water,	^{89}Sr, ^{90}Sr	T66/11-19-81	Analyses incomplete
	" "	" "	T81/11-19-81	" "
	" "	" "	T84/12-03-81	" "
	" "	" "	T97/12-03-81	" "
2.	Bottom Sediment	^{89}Sr, ^{90}Sr	T84/10-16-81	Analyses incomplete
	" "	" "	T85/10-29-81	" "
3.	Crustacea	^{89}Sr, ^{90}Sr	T81/12-17-81	Analyses incomplete
4.	Fish, Carnivore	^{89}Sr, ^{90}Sr	T81/12-17-81	Analyses incomplete
	" "	" "	T84/12-17-81	" "
	" "	" "	T59/09-24-81	" "
	" "	" "	T66/09-24-81	" "
	" "	" "	T69/09-24-81	" "
	" "	" "	T84/09-28-81	" "
	" "	" "	T94/09-24-81	" "
	" "	" "	T95/09-24-81	" "
5.	Turtle Grass	^{89}Sr, ^{90}Sr	T81/11-19-81	Analyses incomplete
6.	Food Crop (Potatoes)	^{89}Sr, ^{90}Sr	T52/09/25-81	Analyses incomplete
	" " "	" "	T57/12-17-81	" "
7.	Mangrove Leaves	^{89}Sr, ^{90}Sr	T71/09-30-81	Analyses incomplete
	" "	" "	T72/09-30-81	" "
	" "	" "	T51/10-29-81	" "
	" "	" "	T86/10-29-81	" "
8.	Soil	^{89}Sr, ^{90}Sr	T52/09-25-81	Analyses incomplete

II. Missing Data

Medium or Pathway	Analysis	Location Date	Reason for Delay
1. TLD	Exposure Rate	T78/7-16-81	Laboratory error - This location not required by Technical Specifications
2. Precipitation	Table 4-12-1 (1.3)	T64/12-81	Sample apparatus found dismantled
"	" "	T64/8-81	Sample apparatus found dismantled
3. Small Animal	Table 4-12-1 (5.2.1)	T/58	All attempts to collect sample were unsuccessful

Docket File
Copy to Cunningham and K. Barr 9/21/82 KL

P.O. BOX 14000, JUNO BEACH, FL 33408

ATTN: REGION II

PDR

FPL

FLORIDA POWER & LIGHT COMPANY

Landis

August 31, 1982
L-82-379

Mr. James P. O'Reilly
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 and 50-251
Radiological Environmental Monitoring Report

Please find attached our Radiological Environmental Monitoring Report and Report of Radioactive Effluent Releases for the period of January, 1982 to June, 1982. This is submitted in accordance with Technical Specification 6.9.4.

Very truly yours,

Robert E. Uhrig

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/JEM/mbd

Attachment

cc: Harold F. Reis, Esquire

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