Florida Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

August 27, 1992
3F0892-10

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

Subject: Semiannual Radioactive Effluent Release Report

Dear Sir:

Pursuant to Title 10, Code of Federal Regulations, Part 50.36(a)(2) and Crystal River Unit 3 Technical Specification 6.9.1.5(d), Florida Power Corporation hereby submits the Crystal River Unit 3 Semiannual Radioactive Effluent Release Report for the period January 1, 1992 through June 30, 1992.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

Attachment

GLB/REF:ff

xc. Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

IE48
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SEMIANNUAL RADIOACTIVE EFFLUENT

RELEASE REPORT

January - June, 1992

FLORIDA POWER CORPORATION

CRYSTAL RIVER - UNIT 3

Facility Operating License No. DPR-72

Docket No. 50-302

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Radiochemistry & Env. Spec.

Approved By: W. S. Crosby
Manager, Site Nuclear Services

Date: 8/26/92

CONTENTS

INTRODUCTION

This report is submitted as required by Technical Specification 6.9.1.5.d to Crystal River Facility Operating License No. DPR-72. The following information is included in this report:

A summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the plant as outlined in Regulatory Guide 1.21 (Rev. 1, 1974) with data summarized on a quarterly basis following the format of Appendix B thereof.

An annual summary of hourly meteorological data collected over the previous years. (In lieu of submittal, this data is maintained on-site and is available to the NRC upon request.)

For each type of solid waste shipped off-site:

- Container Volume
- Total Curie Quantity (specififed as measured or estimated)
- Principal Radionuclides (specified as measured or estimated)
- Type of Waste (e.g., spent resin, compacted dry waste)
- Type of Container (e.g., LSA, Type A, Type B)
- Solidification Agent (e.g., cement)

A list and description of unplanned releases to unrestricted areas.

A description of any changes to the:

- Process Control Program (PCP)
- Off-Site Dose Calculation Manual (ODCM)
- Radioactive Waste Treatment Systems

A list of new Environmental Radiological Monitoring Program dose calculation location changes identified by the land-use census.

Information relating to effluent monitors being inoperable for 30 or more days.

TABLE 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est.Total Error %
A. Fission and Activation Gases				
1. Total Release	Ci	2.[illegible]E+02	5.37E+03	30
2. Average Release Rate for Period	uCi/sec	3.14E+01	6.83E+02	
3. Percent of Technical Specification Limit	%	2.62E-01	4.98E-01	
B. Iodines				
1. Total Iodine - 131	Ci	3.71E-05	4.99E-04	30
2. Average Release Rate for Period	uCi/sec	4.72E-06	6.35E-05	
3. Percent of Technical Specification Limit	%	7.32E-01	4.25E+00	
C. Particulates				
1. Particulates with half-lives > 8 days	Ci	1.64E-06	4.71E-06	30
2. Average Release Rate for Period	uCi/sec	2.09E-07	5.99E-07	
3. Percent of Technical Specification Limit	%	7.32E-01	4.25E+00	
4. Gross Alpha Radioactivity	Ci	8.28E-08	< LLD	
D. Tritium				
1. Total Release	Ci	1.30E+00	5.20E+00	30
2. Average Release Rate for Period	uCi/sec	1.65E-01	6.61E-01	
3. Percent of Technical Specification Limit	%	7.32E-01	4.25E+00	

TABLE 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
1. Fission gases					
Argon-41	Ci			4.08E-03	
Krypton-85	Ci			8.20E+00	5.91E+01
Krypton-85m	Ci	1.31E+00		1.96E-05	2.76E-07
Krypton-87	Ci			2.84E-04	
Krypton-88	Ci			1.32E-03	
Xenon-131m	Ci	7.20E-01	3.72E-01	2.75E-01	5.84E+00
Xenon-133	Ci	2.13E+02	1.96E+02	7.71E+00	2.66E+02
Xenon-133m	Ci	9.83E-01	5.36E-01	3.60E-02	1.00E+00
Xenon-135	Ci	1.49E+01	7.07E+00	1.50E-02	1.30E-01
Xenon-135m	Ci	9.61E-06	1.54E-05	1.85E-04	
Xenon-138	Ci				
Total for Period	Ci	2.31E+02	2.04E+02	1.62E+01	3.32E+02
2. Iodines					
Iodine-131	Ci	2.35E-05	1.11E-04	1.36E-05	3.87E-04
Iodine-132	Ci		1.50E-05	8.61E-07	
Iodine-133	Ci	1.13E-06		1.16E-05	6.79E-06
Iodine-135	Ci			4.88E-06	
Total for Period	Ci	2.46E-05	1.26E-04	3.09E-05	3.94E-04
3. Particulates					
Sodium-24	Ci			8.66E-09	
Chromium-51	Ci	6.52E-07			
Manganese-56	Ci			1.55E-07	
Cobalt-58	Ci	5.57E-08	4.20E-06		1.56E-08
Cobalt-60	Ci			2.71E-08	2.12E-08
Technecium-101	Ci	3.53E-06			
Cerium-141	Ci		4.33E-07		
Cerium-143	Ci	3.72E-07	1.83E-07		
Cerium-144	Ci	6.85E-07			
Tellurium-132	Ci			1.49E-09	
Cesium-134	Ci			7.29E-08	8.13E-09
Cesium-137	Ci	1.96E-09		1.41E-07	2.51E-08
Cesium-138	Ci			7.11E-06	
Rubidium-88	Ci			8.20E-05	1.18E-06
Lanthanum-142	Ci				7.33E-06
Bromine-82	Ci			9.84E-07	
Yttrium-91m	Ci				8.18E-10
Niobium-95	Ci				3.62E-09
Niobium-97	Ci			6.19E-09	
Strontium-92	Ci		6.11E-07		
Yttrium-92	Ci		2.72E-06		
Barium-139	Ci	2.29E-06	1.86E-05		
Yttrium-93	Ci		2.23E-06	4.86E-09	
Total for Period	Ci	7.59E-05	2.90E-05	9.10E-05	8.59E-6

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNAUL REPORT - 1992

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est.Total Error %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	6.10E-01	1.10E+00	25
2. Average diluted concentration during period	uCi/ml	1.03E-07	1.86E-07	
3. Percent of applicable limit	%	1.69E+00	9.56E+00	
B. Tritium				
1. Total Release	Ci	1.00E+02	1.82E+02	30
2. Average diluted concentration during period	uCi/ml	1.69E-05	3.08E-05	
3. Percent of applicable limit	%	5.63E-01	1.03E+00	
C. Dissolved and entrained gases				
1. Total release	Ci	1.57E+00	5.60E+00	25
2. Average diluted concentration during period	uCi/ml	2.66E-07	9.48E-07	
3. Percent of applicable limit	%	1.33E-01	4.74E-01	
D. Gross alpha radioactivity				
1. Total release	Ci	< LLD	< LLD	30
E. Volume of Waste released (prior to dilution)				
1. Batch and Continuous Modes	Liters	7.71E+06	7.83E+06	10
F. Volume of dilution water used during period				
1. Batch and Continuous Modes	Liters	5.91E+09	8.71E+09	10

TABLE 4

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
Sodium-24	Ci				2.44E-04
Chromium-51	Ci			2.35E-03	7.90E-02
Manganese-54	Ci			7.31E-04	1.22E-02
Manganese-56	Ci			9.19E-06	2.35E-07
Iron-55	Ci			1.64E-03	2.20E-03
Cobalt-58	Ci			8.07E-02	3.53E-01
Iron-59	Ci			5.53E-05	5.09E-03
Cobalt-57	Ci			1.40E-04	5.39E-04
Cobalt-60	Ci			7.96E-03	3.93E-02
Copper-64	Ci				8.51E-04
Zinc-65	Ci			7.30E-06	6.50E-07
Zinc-69	Ci				6.51E-06
Rubidium-88	Ci			3.61E-04	1.54E-04
Strontium-89	Ci			7.14E-04	7.58E-04
Strontium-90	Ci			2.90E-05	6.05E-05
Strontium-92	Ci			4.88E-04	6.65E-04
Yttrium-91	Ci				1.86E-03
Yttrium-92	Ci				7.66E-05
Niobium-95	Ci			1.32E-03	3.71E-02
Niobium-97	Ci			2.00E-03	2.99E-03
Zirconium-95	Ci			4.44E-04	2.82E-02
Zirconium-97	Ci			1.07E-04	
Molybdenum-99	Ci			1.18E-02	2.09E-02
Technetium-99m	Ci			1.49E-03	2.16E-03
Ruthenium-103	Ci			7.06E-05	7.00E-03
Ruthenium-106	Ci			1.33E-04	2.47E-03
Silver-110m	Ci			1.04E-03	1.56E-03
Antimony-122	Ci			1.69E-04	1.01E-03
Antimony-124	Ci				8.48E-03
Antimony-125	Ci			1.16E-02	4.39E-02
Iodine-131	Ci			1.18E-03	1.05E-03
Iodine-132	Ci			1.13E-04	1.60E-04
Tellurium-129	Ci			9.70E-06	8.41E-02
Tellurium-129m	Ci				1.50E-02
Tellurium-132	Ci			1.61E-04	1.00E-03
Iodine-133	Ci			1.08E-04	1.49E-05
Cesium-134	Ci			1.27E-01	2.82E-02
Cesium-137	Ci			1.70E-01	4.04E-02
Barium-139	Ci				7.65E-05
Barium-140	Ci				6.66E-05
Lanthanum-140	Ci				4.55E-03
Lanthanum-142	Ci			1.14E-05	
Cerium-141	Ci				2.43E-03
Cerium-143	Ci			2.94E-05	
Cerium-144	Ci				3.10E-03
Protactinium-144	Ci				8.50E-03
Tungsten-187	Ci			4.38E-05	
Neodymium-147	Ci			1.44E-06	6.83E-06
Neptumium-239				1.69E-04	1.35E-04
Total for period	Ci			4.24E-01	8.41E-01

TABLE 4 (CONTINUED)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Dissolved & Entrained Gases	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
Argon-41	Ci				4.72E-05
Krypton-85	Ci			1.21E-02	1.48E-01
Krypton-85m	Ci			2.35E-05	8.64E-05
Kyrpton-87	Ci				1.78E-06
Krypton-88	Ci			2.41E-05	1.79E-05
Xenon-131m	Ci			6.77E-03	1.00E-01
Xenon-133	Ci			1.51E+00	5.31E+00
Xenon-133m	Ci			1.47E-02	3.04E-02
Xenon-135	Ci	9.54E-05		2.74E-02	9.86E-03
Xenon-135m	Ci				

Tritium	Ci	2.69E-02	3.92E-02	1.00E+02	1.81E+02

TABLE 5

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Non-irradiated fuel)

1. Type of waste	Unit	First 6-month period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	4.81E+01* 1.39E+02	20
b. Dry compressible waste, contaminated equipment, etc.	m^3 Ci	3.54E+02* 1.21E+00	50
c. Irradiated components, control rods, etc.	m^3 Ci	4.10E-01 1.15E+02	20
d. Other (describe) Solidified phosphoric acid and sludge	m^3 Ci		

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

a.	Cs-137	34.1	Co-60	10.5	Mn-54	1.3
	Cs-134	21.8	H-3	9.2		
	Co-58	14.6	Sr-89	2.7		
b.	Fe-55	24.8	Ni-63	10.7	Cr-51	2.6
	Co-58	19.9	Cs-137	8.7	Tc-99	1.9
	Co-60	14.1	Cs-134	5.2	C-14	1.6
c.	Fe-55	66.0	Co-60	33.0		
d.						

3. Solid Waste Disposition

Number of Shipments	Mode of Transporation	Destination
5	Exclusive Use Vehicle	Barnwell, SC (CNSI)
8	Exclusive Use Vehicle	Oak Ridge, TN (SEG)*

IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transporation	Destination
0	N/A	N/A

* Scientific Ecology Group (SEG) repacks secondary plant resin and non-compacted dry waste in order to reduce burial volume.

** Curie values and principle radionuclides are estimates based on a combination of direct and indirect methods.

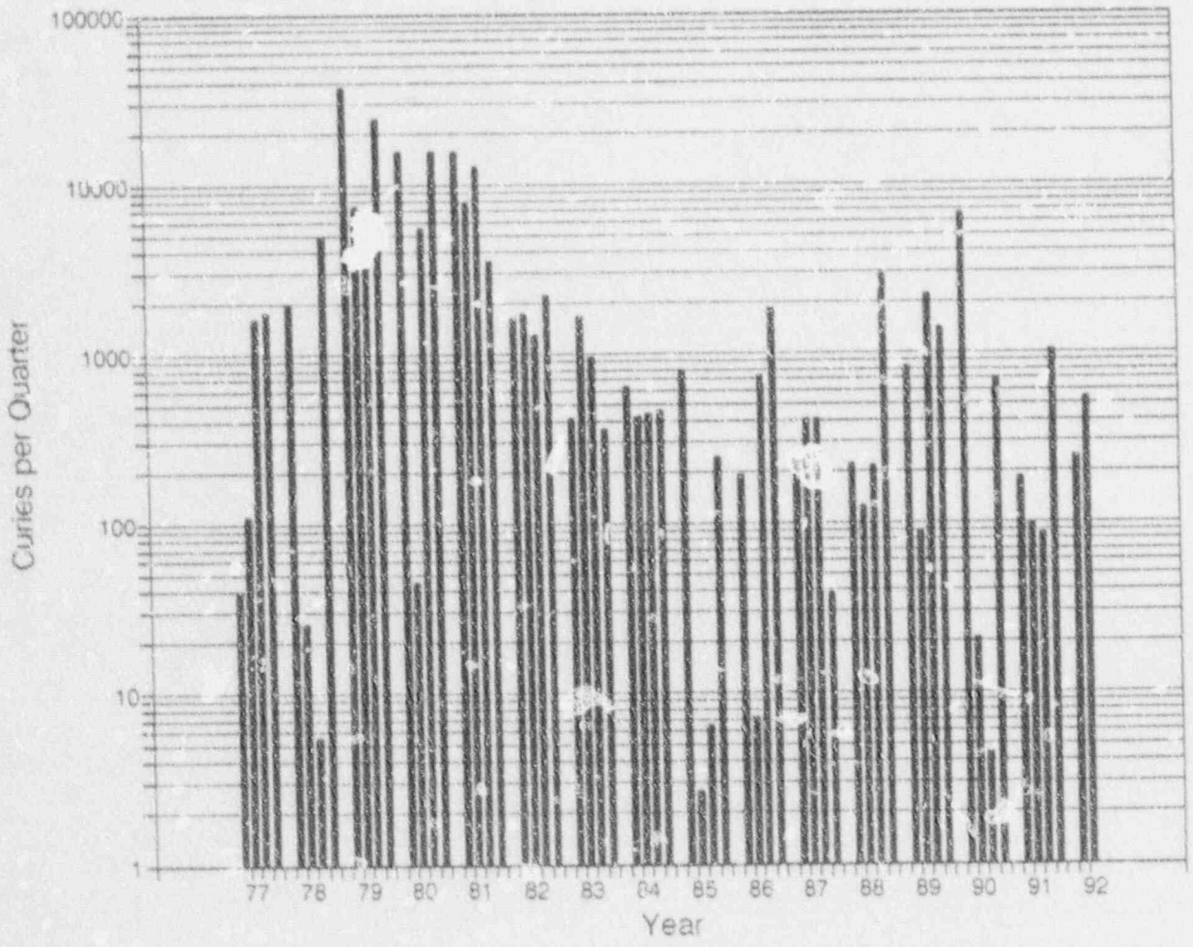
TABLE 6

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1992

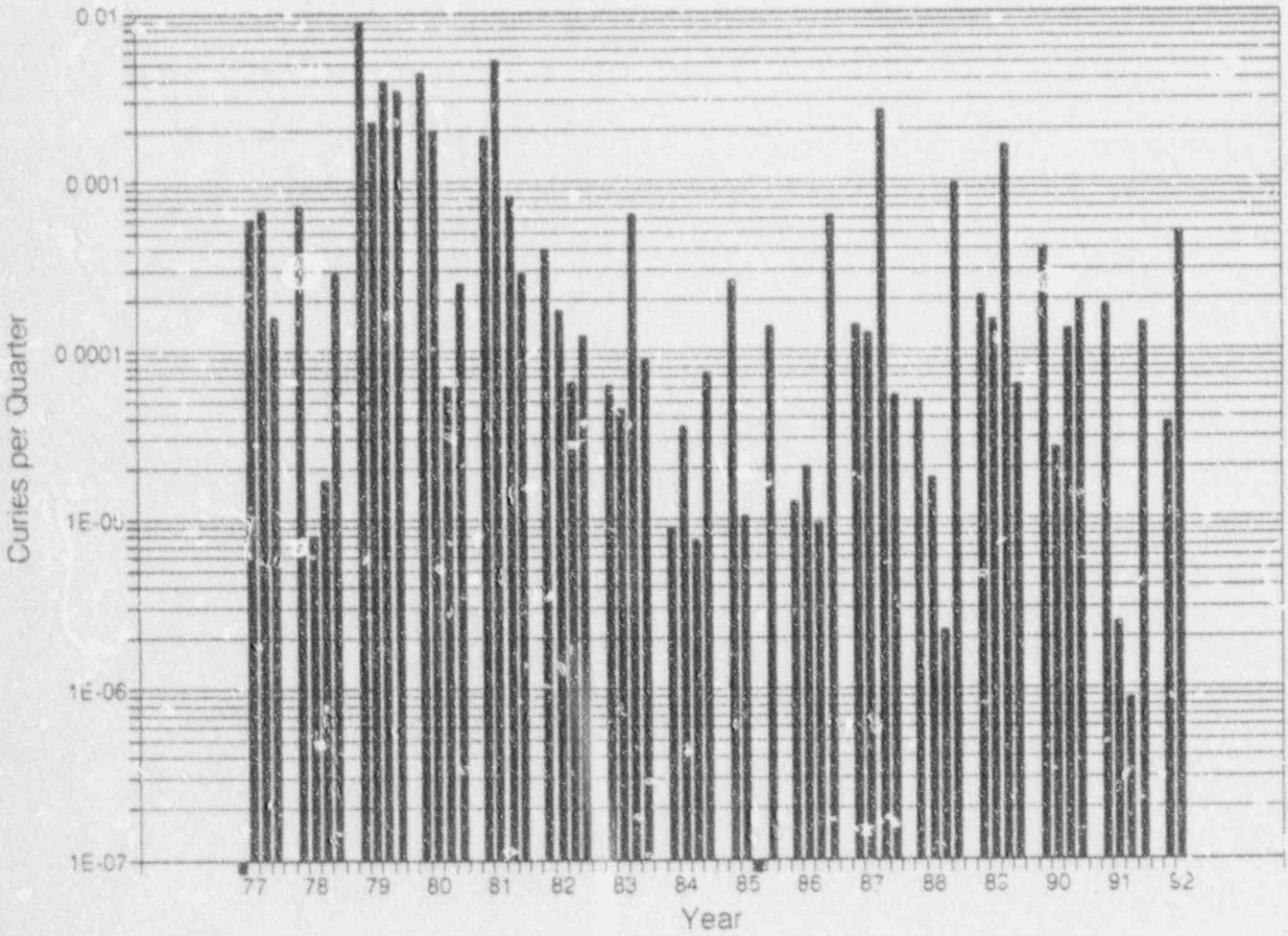
DATE AND SHIPMENT #	CONTAINER VOLUME *	TOTAL CURIES	PRINCIPLE RADIONUCLIDES	WASTE TYPE	CONTAINER TYPE	SOLIDIF. AGENT
2-27-92 92-07	3 @ 190	9.3E-04	Cs-137, Cs-134, H-3, Sr-89, Fe-55	SC	ST	N/A
4-01-92 92-11	2 @ 190 1 @ 180	3.2E-03	Cs-137, Cs-134, H-3, Sr-89, Sb-122, Fe-55	SC	ST	N/A
4-23-92 92-13	1 @ 205.8	47	Cs-137, Cs-134, Co-58	NW	ST	N/A
4-29-92 92-14	1 @ 2080	5.1E-02	Cs-137, Cs-134, Sr-89, Ni-63, Co-60	SR	ST	N/A
5-19-92 92-20	2 @ 1040	8.0E-02	Co-60, Co-58, Sb-122, Cs-137, Cs-134	NW	ST	N/A
5-22-92 92-21	1 @ 14.6	115	Co-60, Ni-63, Fe-55	IC	ST	N/A
6-02-92 92-24	1 @ 2080	2.9E-01	Co-60, Cs-137, Co-58, Cs-134, Ni-63, Fe-55,	NW	HIC	N/A
6-09-92 92-26	2 @ 1040	3.3E-01	Co-58, Fe-55, Co-60 Mn-54, C-14, Ni-63	NW	HIC	N/A
6-19-92 92-30	1 @ 120.3	19	Cs-137, Cs-134, Cr-51, Co-58 Co-60	F	ST	N/A
6-23-92 92-34	2 @ 1040	2.1E-01	Fe-55, Co-60, Co-58, Cs-134, Mn-54, Ni-63	NW	ST	N/A
6-26-92 92-35	2 @ 1040	2.4E-01	Fe-55, Co-60, Mn-54, Co-58, Cr-51, C-14	NW	ST	N/A
6-29-92 92-39	1 @ 120.3	34	Fe-55, Cs-137, Co-60, Co-58, Ni-63,	F	ST	N/A
6-30-92 92-40	1 @120.3	39	Cs-137, Co-60, N1-63, Co-58, Cs-134, Mn-54	F	ST	N/A

SR - Spent Resin
SC - Secondary Resin
F - Filters
ST - Strong Tight
NW - Non-Compacted Waste
CW - Compacted Waste
EB - Evaporator Bottoms
HIC - High Integrity Container
CE - Contaminated Equipment
IC - Irradiated Components
SW - Solidified Wastes
* Cubic Feet

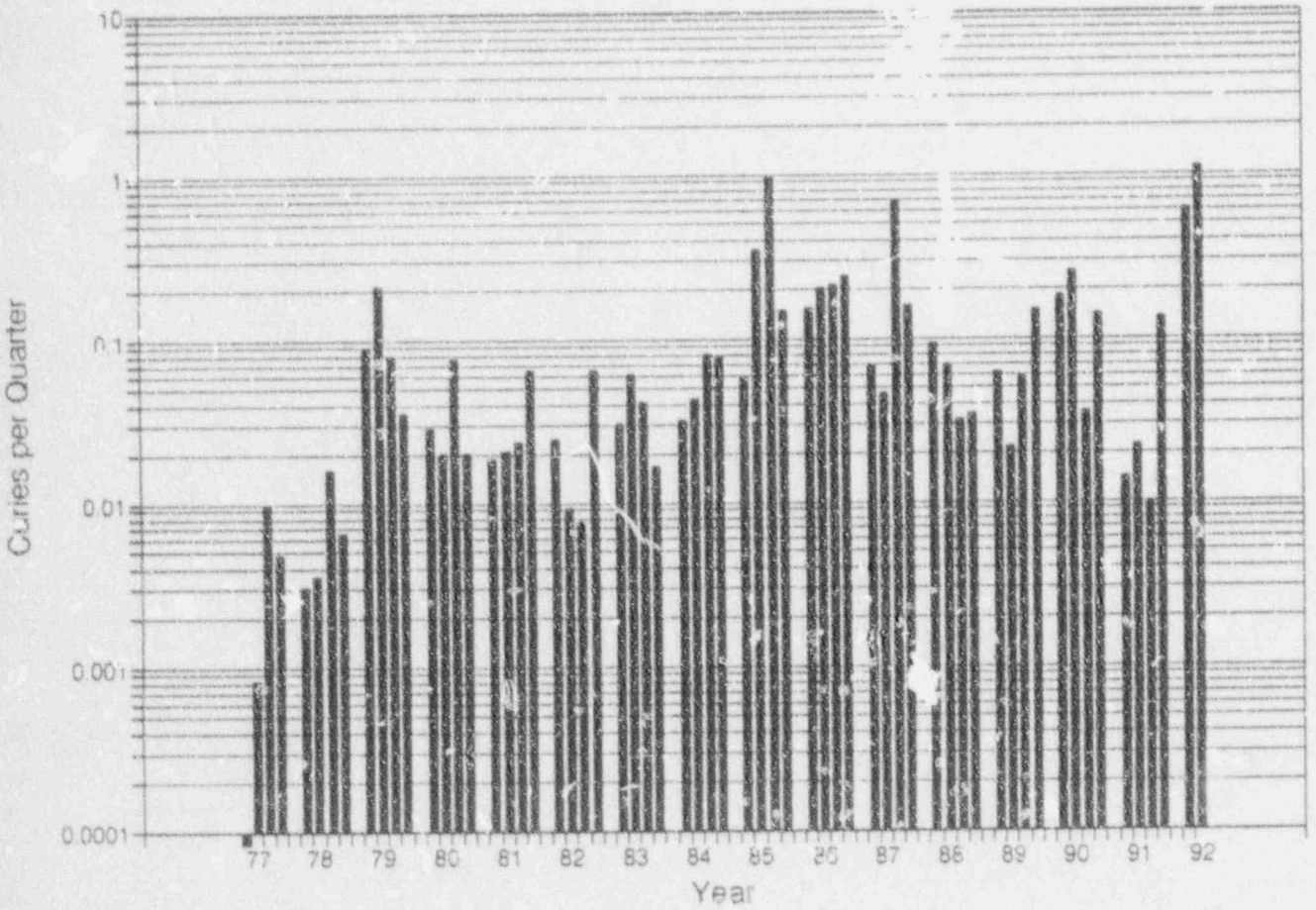
Airborne Releases - Noble Gases



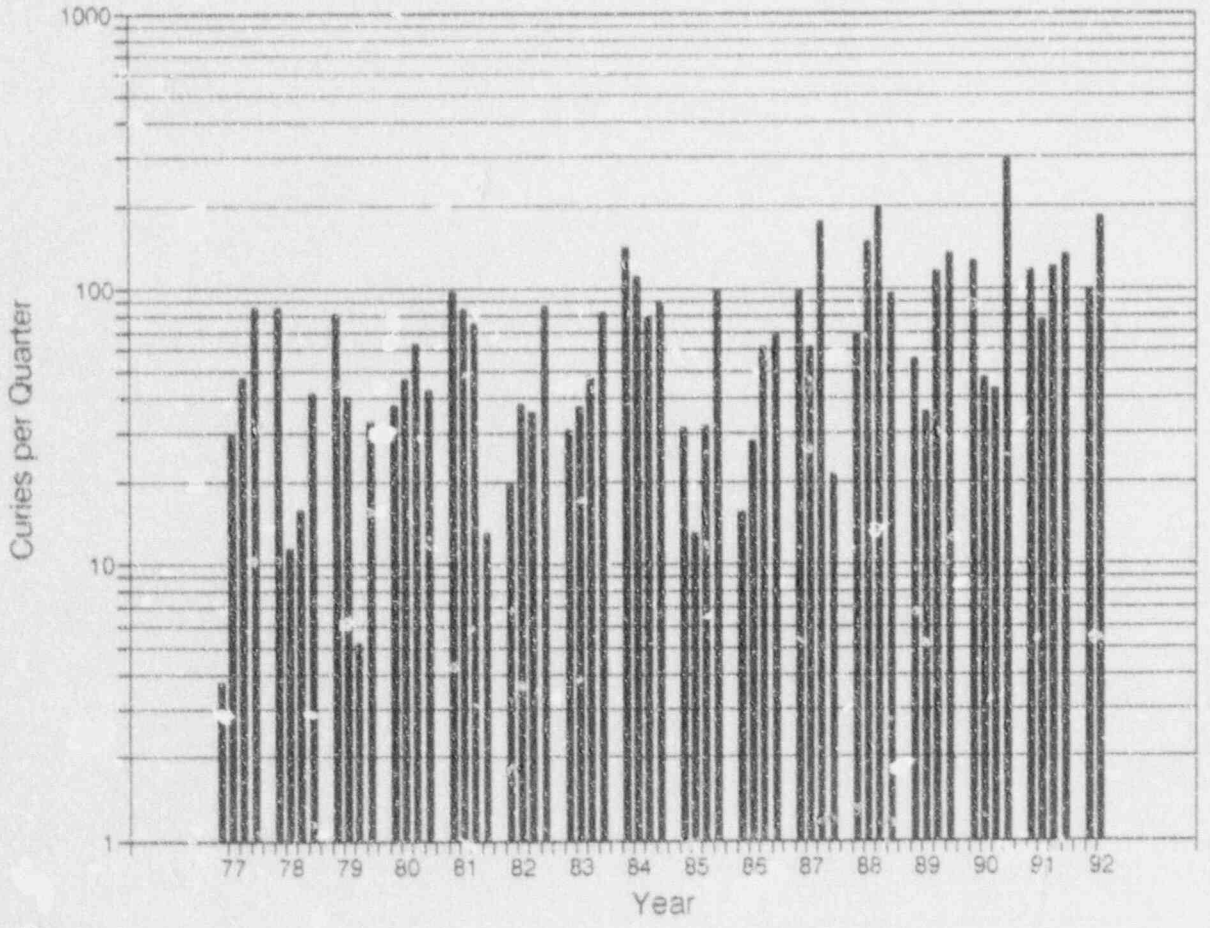
Airborne Releases - Iodines



Liquid Releases - Fission & Activation Products



Liquid Releases - Tritium



UNPLANNED RELEASES

There were no unplanned gaseous releases for the period of this report.

There was one unplanned liquid release on February 13, 1992.
(Ref. Problem Report 92-0005)

Approximately 5700 gallons of water from the Nuclear Services Closed Cycle Cooling (SW) system leaked into the Industrial Cooler Closed Cycle Cooling (CI) system. This caused the CI system sump to overflow to the site discharge canal via storm drains. Total acitivity releases was estimated to be approximately 47 microcuries (25 microcuries of H-3, 10 microcuries of Xe-133, and 2 microcuries of Cs-137).

RADIOACTIVE WASTE TREATMENT SYSTEMS

There were no significant changes to the radioactive waste treatment systems for the period of this report.

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM

The June land-use census did not identify any new dose calculation locations.

EFFLUENT MONITOR INSTRUMENTATION OPERABILITY

No effluent monitor was inoperable for a period of 30 days or more for the period of this report.

ODCM AND PCP

There were no changes to the Off-Site Dose Calculation Manual or the Process Control Program for the period of this report.