NEW YORK POWER AUTHORITY

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

JANUARY 1, 1997 - JUNE 30, 1997

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SUPPLEMENTAL INFORMATION

FACILITY: JAFNPP LICENSEE: NEW YORK POWER AUTHORITY

1. **Technical Specification Limits**
   a. Fission and Activation Gases:

      (1) The dose rate at or beyond the site boundary due to radioactive materials released from the plant in gaseous effluent shall be limited as follows:

         (a) Less than or equal to 500 mrem/year to the whole body and less than or equal to 3000 mrem/year to the skin from noble gases.

      (2) The air dose to areas at or beyond the site boundary from noble gases released from the plant in gaseous effluent shall be limited:

         (a) During any calendar quarter, to less than or equal to 5 mrad from gamma radiation, and less than or equal to 10 mrad from beta radiation; and,

         (b) During any calendar year, to less than or equal to 10 mrad from gamma radiation and less than or equal to 20 mrad from beta radiation.

   b. Tritium, Iodines and Particulates, Half Lives > 8 days:

      (1) The dose to a member of the public at or beyond the site boundary from Iodine-131, Iodine-133, Tritium, and radionuclides in particulate form with half-lives greater than 8 days released from the plant in gaseous effluent shall be limited:

         (a) During any calendar quarter to less than or equal to 7.5 mrem to any organ; and,

         (b) During any calendar year to less than or equal to 15 mrem to any organ.

         (c) Less than 0.1% of the limits of Specification 3.4.a.1 and 3.4.a.2 as a result of burning contaminated oil.

      (2) The dose rate at or beyond the site boundary due to radioactive materials released from the plant in gaseous effluents shall be limited as follows:

         (a) Less than or equal to 1500 mrem/year to any organ from Iodine-131, Iodine-133, Tritium and for radioactive materials in particulate form with half-lives greater than 8 days (inhalation pathway only).

SUPPLEMENTAL INFORMATION (Continued)

c. Liquid Effluents:

(1) The concentration of radioactive materials released to the unrestricted areas shall not exceed the values specified in 10 CFR 20, Appendix B, Table II, Column 2. For dissolved or entrained noble gases the concentration shall be limited to 2.00E-04 μCi/ml.

(2) The dose to a member of the public from radioactive materials released from the plant in liquid effluents to unrestricted areas shall be limited as follows:

(a) During any calendar quarter, limited to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ; and,

(b) During any calendar year, limited to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

2. Maximum Permissible Concentrations

a. Fission and activation gases: (None specified)

b. Iodines: (None specified)

c. Particulates, half-lives >8 days: (None specified)

d. Liquid effluents:	Quarter 1	Quarter 2
(1) Fission and activation products (mixture MPC) (μCi/ml)	NONE	NONE
(2) Tritium (μCi/ml)	3.00E-03	3.00E-03
(3) Dissolved and entrained gases (μCi/ml)	2.00E-04	2.00E-04

SUPPLEMENTAL INFORMATION (Continued)

3. **Average Energy** (None specified)

4. **Measurements and Approximations of Total Radioactivity**

   a. Fission and Activation Gases: Continuous monitor on each release path calibrated to a marinelli grab sample analyzed by gamma spectroscopy; bubbler grab sample analyzed for Tritium.

   b. Iodines: Gamma spectral analysis of charcoal cartridge and particulate filter on each release path.

   c. Particulates: Gamma spectral analysis of each particulate filter and charcoal cartridge for each release path. A four week per quarter composite of particulate filters for each release path for Strontium-89 and Strontium-90. One week per month particulate filter for each release path for gross alpha.

   d. Liquid Effluents: Gamma spectral analysis of each batch discharged, except composite analysis for Strontium-89, Strontium-90, Iron-55, Tritium, and Alpha.

   e. Solid Waste: Gamma spectral analysis of a representative sample of each waste shipment. Scaling factors established from off-site composite sample analyses to estimate concentration of non-gamma emitters. Low activity trash shipments, curie content estimated by dose rate measurement and application of appropriate scaling factors.

   f. Error Estimation Method: Overall error for sampling and analysis estimated by combining individual errors using error propagation methods. This process is composed of determinate and undeterminate errors.

      Determinate - Pump flowrates, volume measurements and analysis collection yields

      Undeterminate - Random counting error estimated using accepted statistical calculations

SUPPLEMENTAL INFORMATION (Continued)

5. Batch Releases

a. Liquid:	Quarter 1	Quarter 2
(1) Number of batch releases:	NONE	NONE
(2) Total time period for batch release: (min)	NONE	NONE
(3) Maximum time period for batch release: (min)	NONE	NONE
(4) Average time period for batch release: (min)	NONE	NONE
(5) Minimum time period for batch release: (min)	NONE	NONE
b. Gaseous:	NONE	NONE

There were no gaseous batch releases for this report period.

6. Abnormal Releases

a. Liquid:	Quarter 1	Quarter 2
(1) Number of releases:	NONE	NONE
(2) Total activity released:	NONE	NONE
b. Gaseous		
(1) Number of releases:	NONE	NONE
(2) Total activity released:	NONE	NONE

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TABLE 1A
GASEOUS EFFLUENTS–SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES				
1. Total Release	Ci	2.54E+01	3.77E+01	≤2.50E+01
2. Average release rate for period	µCi/sec	3.27E+00	4.79E+00	
3. Tech. Spec. Limit	%	*	*	
B. IODINE-131				
1. Total Iodine-131	Ci	8.87E-05	5.47E-05	≤2.50E+01
2. Average release rate for period	µCi/sec	1.14E-05	6.96E-06	
3. Tech. Spec. Limit	%	*	*	
C. PARTICULATES				
1. Particulates with half-lives >8 days	Ci	4.09E-05	1.93E-04	≤3.60E+01
2. Average release rate for period	µCi/sec	5.26E-06	2.45E-05	
3. Tech. Spec. Limit	%	*	*	
4. Gross alpha radioactivity	Ci	1.23E-06	2.29E-07	≤2.50E+01
D. TRITIUM				
1. Total Release	Ci	2.55E+01	3.08E+01	≤2.50E+01
2. Average release rate for period	µCi/sec	3.28E+00	3.93E+00	
3. Tech. Spec. Limit	%	*	*	
***E. PERCENT OF TECHNICAL SPECIFICATION LIMITS**				
FISSION AND ACTIVATION GASES				
1. Quarterly gamma air dose limit	%	3.47E-02	3.12E-02	
2. Quarterly beta air dose limit	%	8.67E-03	6.12E-03	
3. Yearly gamma air dose limit	%	1.74E-02	1.56E-02	
4. Yearly beta air dose limit	%	4.33E-03	3.06E-03	
5. Whole body dose rate limit	%	3.02E-03	3.02E-03	
6. Skin dose rate limit	%	8.14E-03	6.36E-04	
HALOGENS, TRITIUM AND PARTICULATES WITH HALF-LIVES >8 DAYS				
7. Quarterly dose limit (organ)	%	2.19E-02	2.19E-02	
8. Yearly dose limit (organ)	%	1.09E-02	1.09E-02	
9. Organ dose rate limit	%	6.34E-05	6.96E-05	

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TABLE 1B
GASEOUS EFFLUENTS–ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE QUARTER 1	CONTINUOUS MODE QUARTER 2
1. Fission Gases			
Argon-41	Ci	1.06E+00	1.39E+00
Krypton-85m	Ci	7.51E-02	2.28E+00
Krypton-87	Ci	--------	2.05E+00
Krypton-88	Ci	--------	5.38E+00
Xenon-133	Ci	1.12E-01	3.05E-01
Xenon-135	Ci	1.07E+00	1.21E+01
Xenon-135m	Ci	5.53E-01	1.96E-02
Xenon-137	Ci	8.56E-02	--------
Xenon-138	Ci	1.23E-01	7.27E-02
TOTAL	Ci	3.08E+00	2.36E+01
2. Iodines			
Iodine-131	Ci	7.01E-05	4.77E-05
Iodine-133	Ci	1.23E-04	2.56E-04
Iodine-135	Ci	--------	1.32E-04
TOTAL	Ci	1.93E-04	4.36E-04
3. Particulates			
Manganese-54	Ci	1.40E-06	6.50E-07
Iron-55	Ci	--------	6.32E-09
Cobalt-60	Ci	2.12E-07	--------
Strontium-89	Ci	5.80E-07	2.10E-06
Barium/Lanthanum-140	Ci	1.69E-06	2.20E-07
TOTAL	Ci	3.88E-06	2.98E-06
4. Tritium			
Hydrogen-3	Ci	1.61E+00	1.99E+00

Note: There were no batch releases for this report period.

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TABLE 1C
GASEOUS EFFLUENTS–GROUND LEVEL RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE QUARTER 1	QUARTER 2
1. Fission Gases			
Xenon-135	Ci	2.13E+00	1.20E+00
Xenon-135m	Ci	3.84E+00	2.67E+00
Xenon-138	Ci	1.63E+01	1.02E+01
TOTAL	Ci	2.23E+01	1.41E+01
2. Iodines			
Iodine-131	Ci	1.86E-05	6.97E-06
Iodine-133	Ci	1.02E-04	9.13E-05
TOTAL	Ci	1.21E-04	9.83E-05
3. Particulates			
Chromium-51	Ci	--------	7.65E-05
Manganese-54	Ci	2.97E-06	3.50E-05
Iron-59	Ci	--------	1.44E-05
Cobalt-58	Ci	--------	7.81E-06
Cobalt-60	Ci	3.21E-06	1.90E-05
Zinc-65	Ci	--------	1.73E-05
Strontium-89	Ci	2.47E-05	1.83E-05
Antimony-124	Ci	--------	1.42E-06
Cesium-137	Ci	2.22E-06	5.77E-07
Barium/Lanthanum-140	Ci	3.86E-06	--------
TOTAL	Ci	3.70E-05	1.90E-04
4. Tritium			
Hydrogen-3	Ci	2.39E+01	3.08E+01

Note: There were no batch releases for this report period.

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TABLE 2A
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 and alpha)	Ci	NONE	NONE	≤2.50E+01
2. Average diluted concentration during period	µCi/ml	NONE	NONE	
3. Applicable limit	%	--------	--------	
B. TRITIUM				
1. Total Release	Ci	NONE	NONE	≤2.50E+01
2. Average diluted concentration during period	µCi/ml	NONE	NONE	
3. Applicable limit	%	--------	--------	
C. DISSOLVED AND ENTRAINED GASES				
1. Total Release	Ci	NONE	NONE	≤2.50E+01
2. Average diluted concentration during period	µCi/ml	NONE	NONE	
3. Applicable Limit	%	--------	--------	
D. GROSS ALPHA RADIOACTIVITY				
1. Total Release	Ci	NONE	NONE	≤4.20E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	liters	NONE	NONE	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	liters	NONE	NONE	
G. PERCENT OF TECHNICAL SPECIFICATION LIMITS				
1. Quarterly Whole Body Dose	%	--------	--------	
2. Quarterly Organ Dose	%	--------	--------	
3. Annual Whole Body Dose	%	--------	--------	
4. Annual Organ Dose	%	--------	--------	

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TABLE 2B
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	BATCH MODE QUARTER 1	BATCH MODE QUARTER 2
1. Fission and Activation Products			
None			
2. Tritium			
None			
3. Dissolved and Entrained Gases			
None			

Note: There were no continuous mode discharges during this report period.

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TABLE 3A
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

	Unit	6-month Period Class A	Class B	Class C	Est Total Error %
1. Type of Waste					
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	5.05E+01	4.84E+00	0.00E+00	1.00E+01
	Ci	9.48E+01	4.02E+01	0.00E+00	2.50E+01
b. Dry compressible waste, contaminated equipment, etc.	m^3	0.00E+00	0.00E+00	0.00E+00	--
	Ci	0.00E+00	0.00E+00	0.00E+00	--
c. Irradiated components, control rods, etc.	m^3	0.00E+00	0.00E+00	0.00E+00	--
	Ci	0.00E+00	0.00E+00	0.00E+00	--
d. Other: Dry Compressible Waste, contaminated equip., ect. for volume reduction	m^3	1.13E+02	0.00E+00	0.00E+00	1.00E+01
	Ci	2.98E-01	0.00E+00	0.00E+00	2.50E+01

2. Estimate of Major Nuclide Composition (by type of waste)

a. Spent resins, filter sludges, evaporator bottoms, etc.

Isotope	Percent	Curies		Isotope	Percent	Curies	
Iron-55	4.51E+01	5.37E+01	E	Cesium-137	4.13E+00	4.92E+00	M
Cobalt-60	3.00E+01	3.58E+01	M	Nickel-63	1.63E+00	1.94E+00	E
Zinc-65	9.89E+00	1.18E+01	M	Cobalt-58	8.85E-01	1.05E+00	M
Manganese-54	7.17E+00	8.54E+00	M	Carbon-14	5.57E-01	6.62E-01	M

b. Dry compressible waste, contaminated equipment, etc.
NONE

c. Irradiated components, control rods, etc.
NONE

TABLE 3A (continued)
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

d. Other: Dry Compressible Waste, contaminated equip., ect. for volume reduction.

Isotope	Percent	Curies		Isotope	Percent	Curies	
Iron-55	5.98E+01	1.78E-01	E	Nickel-63	1.03E+00	3.07E-03	E
Cobalt-60	2.18E+01	6.51E-02	E	Cesium-137	8.51E-01	2.54E-0	E
Manganese-54	8.68E+00	2.59E-02	E	Carbon-14	6.00E-01	1.79E-03	E
Zinc-65	7.02E+00	2.09E-02	E	Cerium-144	8.34E-02	2.49E-04	E

(E - ESTIMATED M - MEASURED)

Percentage of nuclides and total activities are based on a combination of direct measurements and scaling for non-gamma emitting nuclides.

3. **Solid Waste Disposition**

No. of Shipments	Mode of Transportation	Destination
10	Truck	Chem-Nuclear Systems, Inc. Barnwell, SC
2	Truck	*Scientific Ecology Group Oak Ridge, TN

* Volume Reduction Facility

B. IRRADIATED FUEL SHIPMENTS (Disposition)

No. of Shipments	Mode of Transportation	Destination
None	N/A	N/A

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TABLE 3B
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. NRC CLASS A

SOURCE OF WASTE	PROCESSING EMPLOYED	CONTAINER VOLUME	TYPE OF CONTAINER	NUMBER OF CONTAINERS
Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	Dewatering	205.8 ft^3	HIC	7
Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	Dewatering	170.8 ft^3	HIC	3
Dry Compressible Waste (DAW), Contaminated Equipment, etc.	Non-Compacted	1040 ft^3	STC	4

Solidification Agent: None

HIC - High Integrity Container
STC - Strong Tight Container

ATTACHMENT NO. 1

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

In accordance with Section 7.3.C.3 of Amendment 93 to the James A. FitzPatrick Nuclear Power Plant Technical Specifications, changes made to the Offsite Dose Calculation Manual (ODCM) during the reporting period shall be included in the Semi-Annual Radioactive Effluent Release Report.

There were no changes to the Offsite Dose Calculation Manual (ODCM) this report period.

ATTACHMENT NO. 2

SUMMARY OF CHANGES TO THE PROCESS CONTROL PROGRAM

In accordance with Section 7.3.C.3 of Amendment 93 to the James A. FitzPatrick Nuclear Power Plant Technical Specifications, changes made to the Process Control Program (PCP) during the reporting period shall be included in the Semi-Annual Radioactive Effluent Release Report.

Revision 4 to the PCP was approved by the Plant Operating Review Committee on March 4, 1997 at Meeting No. 97-014 and became effective on March 6, 1997. This revision does not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes. Listed below is a brief summary of the changes incorporated in this revision.

1) Process Control Program Procedure

- Procedure was upgraded to comply with the requirements of the JAF Procedure Writing Manual AP-02.01 Rev. 6.
- Deleted various developmental references, CNSI and JAF procedures that were not applicable to this process.
- Memo JLIC-96-187 Licensing to Quality Assurance/Quality Control clarified that editorial revisions to the PCP need not be reported in the Semi-Annual Radioactive Release Report.
- Program responsibility assigned to Operations Manager per instructions from General Manager - Operations.
- Designate precoat and bead resin dewatering procedures and RDS-1000 operation procedure as implementing procedures.

ATTACHMENT NO. 3

SUMMARY OF CHANGES TO THE ENVIRONMENTAL MONITORING AND DOSE CALCULATION LOCATIONS

In accordance with Section 7.3.C.3 of Amendment 93 to the James A. FitzPatrick Nuclear Power Plant Technical Specifications, a listing of new locations for dose calculation and/or environmental monitoring identified by the land use census shall be included in the Semi-Annual Radioactive Effluent Release Report.

CHANGES IN ENVIRONMENTAL MONITORING LOCATIONS

During the report period, no changes in the Environmental Monitoring Locations sampled to implement the requirements of Technical Specifications were made. Sample location selections are based on the annual land use census.

NEW LOCATIONS FOR DOSE CALCULATIONS

During the report period, no changes in Dose Calculation Receptor Locations were required based on the results of the land use census.

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ATTACHMENT NO. 4

DEVIATIONS FROM THE REQUIRED ENVIRONMENTAL SAMPLING SCHEDULE

In accordance with Section 7.3.C.7 of Amendment 93 to the James A. FitzPatrick Nuclear Power Plant Technical Specifications, the cause for unavailability of any environmental samples required during the report period shall be included in the Semi-Annual Radioactive Effluent Release Report.

EXCEPTIONS TO THE ENVIRONMENTAL SAMPLING PROGRAM

1. The air sampling pumps at the R-1 and R-2 off-site Environmental Sampling Stations were inoperable for approximately 5 hours. The loss of power at the Environmental Air Sampling Station was the result of a local power outage. The air sample pumps were out of service for a five hour period between 03/11/97 and 03/18/97. No corrective action was implemented.

ATTACHMENT NO. 5

SEMI-ANNUAL SUMMARY OF HOURLY METEOROLOGICAL DATA

The James A. FitzPatrick Nuclear Power Plant Radiological Environmental Technical Specification 7.3.c.2 states in part "The Radioactive Effluent Release Report to be submitted within 60 days after January 1 of each year may include an annual summary of meteorological data collected over the previous year. If the meteorological data is not included, the licensee shall retain it on file and provide it to the U.S. Nuclear Regulatory Commission upon request." In accordance with the aforementioned technical specification, meteorological data is not included in this report. It is retained on file and is available upon request.