Effluent and Waste Disposal

Semi-Annual Report

January 1, 1995 - June 30, 1995

Facility Indian Point 3

Licensee New York Power Authority

This information is provided in accordance with the requirements of Regulatory Guide 1.21. The numbered sections of this report reference corresponding sections of the subject Regulatory Guide, pages 1.21-10 to 12.

A. Supplemental Information

1. Regulatory Limits

Indian Point 3 is presently subject to limits on radioactive waste releases that are set forth in sections 2.3.1, 2.3.2, 2.3.3, 2.4.1, 2.4.2, 2.4.3 and 2.4.4 of Appendix B to Docket No. 50-286 entitled "Environmental Technical Specification Requirements Part II Radiological Environmental" (ETSR). The percentages of the technical specification limits reported in Tables 1A and 2A are the percent of the quarterly limits specified in the ETSR. If more than one limit applies to the release, the most restrictive limit is reported.

2. Maximum Permissible Concentration

a) Fission and Activation Gases

The quarterly dose resulting from release of fission and activation gases is calculated in accordance with the methodology stated in the Offsite Dose Calculation Manual (ODCM). The specific isotopes listed in Table 1C are used to determine the effective dose factors for the time period.

b/c) Iodines, Tritium and Particulates

The quarterly organ dose limit for Iodine 131, tritium and particulates with half-lives greater than eight days is calculated in accordance with the methodology stated in the ODCM.

d) Liquid Effluents

The quarterly dose limit for liquid isotopic releases is calculated in accordance with the methodology stated in the ODCM. The concentration limit for noble gases dissolved in liquid releases is calculated based upon a maximum permissible concentration of 2.00E-4 uCi/ml as required by section 2.3.1.A of the ETSR.

3. Average Energy

The average energies ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases were as follows:

1st Quarter	E_β = 0.00E-00	Mev/dis	$E\gamma$ = 0.00E-00	Mev/dis
2nd Quarter	E_β = 2.53E-01	Mev/dis	$E\gamma$ = 1.28E-02	Mev/dis

There were no Noble Gas releases in the first quarter, 1995.

4. Measurements and Approximations of Total Radioactivity

a) Fission and Activation Gases

Analysis of effluent gases has been performed in compliance with the requirements of Table 3:4-1 of the ETSR. In the case of isolated tanks (batch release) the total activity discharged is based on an isotopic analysis of each batch with the volume of gas in the batch corrected to standard temperature and pressure.

Vapor containment purge discharges that are less than 150 hours/quarter in duration have been treated as batch releases and Vapor Containment pressure relief discharges have been treated as continuous releases (> 500 hrs/year and as defined in NUREG 0133, Section 3.3). At least one complete isotopic concentration analysis of containment air is performed monthly. This analysis is used in conjunction with a process monitor to obtain the isotopic mixture and quantification of each pressure relief. Isotopic analyses for each vapor containment purge are taken prior to and during the purge. This information is combined with the volume of air in each discharge to calculate the quantity of activity released from these discharges.

The continuous building discharges are based on weekly samples of ventilation air for isotopic content. This information is combined with total air volume discharged and the process radiation monitor readings to determine the quantity of activity from continuous discharges.

b/c) Iodines and Particulates

Iodine-131 and particulate releases are quantified by collecting a continuous sample of ventilation air on a TEDA impregnated, activated charcoal cartridge and a glass-fiber filter paper. These samples are changed weekly as required in Table 3.4-1 of the ETSR and the concentration of isotopes found by analysis of these samples is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged.

For other iodine isotopes the concentration of each isotope is determined monthly on a 24-hour sample. The concentration of the isotopes found by analysis is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged.

d) Liquid Effluents

A sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in Table 3.3-1 of the ETSR. This isotopic concentration data is combined with the information on volume discharged to determine the amount of each isotope discharged.

Proportional composite samples of continuous discharges are taken and analyzed in compliance with Table 3.3-1 of the ETSR. This concentration data is combined with the volume discharged to calculate the total activity discharged.

5. Batch Releases

a) Liquid

	1995 1st Quarter	2nd Quarter
Number of Batch Releases	12	29
Total Time Period Batch Releases (Min)	1984	4547
Maximum " " " " " "	210	257
Average " " " " " "	165	157
Minimum " " " " " "	140	125
Average Stream Flow (cfs)	Note: *	Note: *

Note:*

This information is obtained from the Department of the Interior, U.S. Geological Survey, for the Hudson River. Due to the delays in obtaining this data from the governmental agency, flows will be submitted as they become available.

b) Gaseous

Number of Batch Releases	0	3
Total Time Period Batch Releases (Min.)	N/A	441
Maximum " " " " " "	N/A	164
Average " " " " " "	N/A	147
Minimum " " " " " "	N/A	119

6. Abnormal Releases

a) Liquid
None

b) Gaseous
None

7. Radiological Environmental Technical Specifications

The Radiological Environmental Technical Specifications (RETS) require reporting of prolonged outages of effluent monitoring equipment (Sections 2.1.C and 2.2.B) and significant changes in the land use census, Radiological Environmental Monitoring Program (REMP), or exceeding the total curie content limitations in outdoor tanks (Sections 2.8.A, 2.8.B, 2.7.C and 2.3.4.B).

During this reporting period, no required Technical Specification Effluent Monitoring equipment was out of service (OOS) for periods greater than 30 consecutive days.

Included in this report is the justification package for Revision 3 of the Process Control Program Manual.

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B. GASEOUS EFFLUENTS

FIRST AND SECOND QUARTERS, 1995

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (Jan - Jun 1995)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1st	QUARTER 2nd	EST. TOTAL ERROR %
A. Fission & Activation Gases				
1. Total Release	Ci	0.00E+00	1.78E-03	N/A
2. Average release rate for period	uCi/sec	0.00E+00	2.26E-04	
3. Percent of technical spec. limit	%	0.00E+00	5.39E-06	
B. Iodines				
1. Total Iodine - 131	Ci	0.00E-00	0.00E-00	N/A
2. Average release rate for period	uCi/sec	0.00E-00	0.00E-00	
C. Particulates				
1. Total release with T½ >8 days	Ci	0.00E-00	0.00E-00	2.50E+01
2. Average release rate for period	uCi/sec	0.00E-00	0.00E-00	
3. Gross alpha radioactivity	Ci	<1.56E-07	<3.14E-07	
D. Tritium				
1. Total release	Ci	9.20E-02	1.09E-01	2.50E+01
2. Average release rate for period	uCi/sec	1.18E-02	1.39E-02	
E. Percent of Tech Spec Limit Iodines, Particulate with T½ > 8days, & Tritium	%	1.88E-04	2.23E-04	2.50E+01

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (Jan - Jun 1995)
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 1st Quarter	CONTINUOUS MODE 2nd Quarter	BATCH MODE 1st Quarter	BATCH MODE 2nd Quarter
1) Fission Gases					
Krypton (Kr) 85m	Ci				
Krypton (Kr) 85	Ci				1.70E-03
Krypton (Kr) 87	Ci				
Krypton (Kr) 88	Ci				
Xenon (Xe) 131m	Ci				
Xenon (Xe) 133m	Ci				
Xenon (Xe) 133	Ci				
Xenon (Xe) 135m	Ci				
Xenon (Xe) 135	Ci		7.68E-05		
Xenon (Xe) 138	Ci				
Argon (Ar) 41	Ci				
TOTAL FOR PERIOD	Ci	0.00E-00	7.68E-05	0.00E-00	1.70E-03
2) Iodines					
Iodine (I) 131	Ci				
Iodine (I) 133	Ci				
Iodine (I) 135	Ci				
TOTAL FOR PERIOD	Ci	0.00E-00	0.00E-00		

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (Jan - Jun 1995)
GASEOUS EFFLUENTS - GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 1st Quarter	CONTINUOUS MODE 2nd Quarter	BATCH MODE 1st Quarter	BATCH MODE 2nd Quarter
3) Particulates					
Antimony (Sb) 125	Ci				
Barium (Ba) 133	Ci				
Cadmium (Cd) 109	Ci				
Cerium (Ce) 139	Ci				
Cerium (Ce) 141	Ci				
Cerium (Ce) 144	Ci				
Cesium (Cs) 134	Ci				
Cesium (Cs) 137	Ci				
Cobalt (Co) 57	Ci				
Cobalt (Co) 58	Ci				
Cobalt (Co) 60	Ci				
Chromium (Cr) 51	Ci				
Niobium (Nb) 95	Ci				
Strontium (Sr) 89	Ci				
Strontium (Sr) 90	Ci				
Tin (Sn) 113	Ci				
TOTAL	Ci	0.00E-00	0.00E-00		

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C. LIQUID EFFLUENTS

FIRST AND SECOND QUARTERS, 1995

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (Jan - Jun 1995)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNITS	QUARTER 1st	QUARTER 2nd	EST. TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	3.53E-02	4.80E-02	2.50E+01
2. Average diluted concentration during period	uCi/ml	3.48E-10	3.35E-10	
B. Tritium				
1. Total release	Ci	5.06E+01	1.21E+01	2.50E+01
2. Average diluted concentration during period	uCi/ml	4.99E-08	8.45E-08	
C. Dissolved and entrained gases				
1. Total release	Ci	0.00E-00	0.00E-00	N/A
2. Average diluted concentration during period	uCi/ml	0.00E-00	0.00E-00	
D. Gross alpha radioactivity				
1. Total release	Ci	<1.51E-05	<1.07E-04	2.50E+01
E. Volume of waste released (prior to dilution)	liters	3.51E+05	8.93E+05	1.00E+01
F. Volume of dilution water used during period	liters	1.01E+11	1.43E+11	1.00E+01
G. Percent of liquid effluent limit	%	1.42E-01	1.12E-01	2.50E+01

TABLE 2B
LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (Jan - Jun 1995)

Nuclides Released	Unit	CONTINUOUS MODE 1st Quarter	CONTINUOUS MODE 2nd Quarter	BATCH MODE 1st Quarter	BATCH MODE 2nd Quarter
Antimony (Sb) 125	Ci			2.50E-03	5.29E-03
Cobalt (Co) 60	Ci			5.46E-03	1.35E-02
Iron (Fe) 55	Ci			8.94E-03	4.44E-03
Manganese (Mn) 54	Ci			6.77E-05	2.04E-05
Nickel (Ni) 63	Ci			1.83E-02	2.05E-02
Strontium (Sr) 90	Ci				1.12E-05
Cesium (Cs) 134	Ci				3.29E-04
Cesium (Cs) 137	Ci			1.18E-05	8.66E-04
TOTAL FOR PERIOD		0.00E-00	0.00E-00	3.53E-02	4.80E-02

Nuclides	Unit	CONTINUOUS MODE 1st Quarter	CONTINUOUS MODE 2nd Quarter	BATCH MODE 1st Quarter	BATCH MODE 2nd Quarter
TOTAL DISSOLVED AND ENTRAINED GASES	Ci	0.00E-00	0.00E-00	0.00E-00	0.00E-00

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D. SOLID WASTE FIRST AND SECOND QUARTERS, 1995

TABLE 3
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
January, 1 - June 30, 1995
SOLID WASTE SHIPMENTS

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

1. Type of Waste	Unit	6 Month Period Class A	Class B	Class C	Est. Total Error, %
a. Spent resins, filter sludges, etc.	m^3	0	0	0	
	Ci	0	0	0	±25
b. Dry compressible, contam. equipment for burial	m^3	0	0	0	
	Ci	0	0	0	±25
c. Irradiated Components	m^3	0	0	0	
	Ci	0	0	0	N/A
d. Other: Dry compressible, contaminated equip. for volume reduction at offsite facility	m^3	5.9E+1	0	0	
	Ci	8.4E-2	0	0	±25

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

NUCLIDE	UNIT	Dry Vol. Red CLASS A
H-3	%	0.1
C-14	%	2.4
Mn-54	%	1.5
Fe-55	%	54.5
Co-58	%	1.6
Co-60	%	28.8
Ni-59	%	0.2
Sb-125	%	1.1
Cs-134	%	1.9
Cs-137	%	7.9
Pu-241	%	0.1

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

3. Solid Waste Disposition

Number of Shipments	Mode of Transport	Destination
1	Truck	SEG, Oak Ridge TN: for volume reduction.

4. Containers Shipped

Container	Class A Number	Class A Solid. Media	Class B Number	Class B Solid. Media	Class C Number	Class C Solid Media
For Burial:						
Poly HIC	0	None	0	N/A	0	N/A
Drums	0	N/A	0	N/A	0	N/A
Steel Liner	0	N/A	0	N/A	0	N/A
Crates	0	None	0	N/A	0	N/A
For Volume Reduction:						
SeaLand Cont.	2	N/A	0	N/A	0	N/A

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E. RADIOLOGICAL IMPACT ON MAN

FIRST AND SECOND QUARTERS, 1995

(not required to be submitted during this reporting period)

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F. METEOROLOGICAL DATA

FIRST AND SECOND QUARTERS, 1995

(not required to be submitted during this reporting period)

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G. OFFSITE DOSE CALCULATION MANUAL OR PROCESS CONTROL MANUAL CHANGES

FIRST AND SECOND QUARTERS, 1995

(There were no changes to the ODCM during this reporting period.)

(Process Control Program changes are attached.)

Justification Package for Rev. 3 of the PCP

This report is a summary of the changes that have been incorporated in Revision 3 of the Solid Radioactive Waste Process Control program (PCP). It gives a description of and a justification for each change and describes the impact of the change on the process control program. When the impact is described as "None" it is to be interpreted as no impact on the process control program or our compliance with regulatory requirements.

1. a. Description
Replaced the word "procedure" with the word "document" throughout the entire PCP. Affected sections are as follows: 2.0, 2.2.1, 2.2.2, 2.3, 3.5, 4.0, 5.3, 8.1.

b. Justification
The PCP is a program description. Requirements pertaining to revisions of programs are different from that of subordinate procedures (format and editorial requirements, etc.). This clarification was made to prevent confusion of plant personnel.

c. Impact
None.

2. a. Description
Revision to reflect changes in numerical designations of sections in 10 CFR 20. Affected sections are as follows: 5.1.19, 5.1.20, 9.4.2.

b. Justification
Changes to 10 CFR 20.

c. Impact
None.

3. a. Description
Revised section 2.2.3 to include filter media in the list of radioactive materials sent to intermediate processors.

b. Justification
To make the list more comprehensive and to more accurately reflect current practice.

c. Impact
None.

4. a. Description
Revision to correct the title of referenced procedures. Affected sections are as follows: 3.2.7, 3.2.15, 3.2.27.

b. Justification
During procedure upgrade and revision ,several procedure titles were changed.

c. Impact
None.

5. a. Description
Revised section 3.2.10 to correct the title of the referenced procedure.

b. Justification
The referenced procedure title was inaccurate.

c. Impact
None.

6. a. Description
Revised section 7.2.a to read "Only properly trained and qualified personnel will characterize or package radioactive waste or radioactive materials.". The previous wording read "Only personnel authorized by the Waste Management General Supervisor will characterize or package radioactive waste or radioactive materials."

b. Justification
The intent of this paragraph was that only properly trained personnel would characterize or package radioactive waste. The change is for clarity.

c. Impact
None.

7. a. Description
Revised section 9.1.4 to read "Spent resins, spent filter cartridges and sludges are typically processed within shields (normally the shipping cask)." The previous wording read "All spent resins, spent filter cartridges and sludges are processed within shields (normally the shipping cask)."

b. Justification
Due to the low dose rates associated with wastes such as steam generator blow down resin or filters, it is unnecessarily restrictive to require that they be processed inside of a radiation shield.

c. Impact
This is consistent with the ALARA philosophy and has no impact on the Radiation Protection Program or the PCP.

8. a. Description
Revised section 2.1 to read "The Plant has identified seven different categories of waste streams and treats each separately for classification purposes. The following list isn't intended to specifically name every possible waste stream but to list general categories of existing waste streams. Examples of current active waste streams are as follows:" The previous wording read "The Plant has identified seven different waste streams and treats each separately for classification purposes. Examples of current active waste streams are as follows:"

b. Justification
To clarify that the list was not intended to identify each specific waste stream, but list more general types of waste generated at the station.

c. Impact
None.

9. a. Description
Deleted section 3.2.24 RE-RWM-12-43, "Operation of the B-100 Waste Compactor for Crates".

b. Justification
The B-100 waste compactor is no longer utilized at Indian point unit 3.

c. Impact
None.

10. a. Description
Added section 3.2.24 RE-RWM-12-46 "Sorting table use".

b. Justification
This procedure covers the initial sorting and screening of Radioactive waste to determine suitability for processing and recovery of materials.

c. Impact
None.

11. a. Description
Revised section 3.2.3. RE-ADM-1-1 "Radiological and Environmental Services procedure preparation, review, and approval" has been replaced by AP-3 "IP3 procedure preparation, review, and approval".

b. Justification
RE-ADM-1-1 is no longer used. AP-3 is the procedure that controls preparation, review, and approval of RES procedures.

c. Impact
None.

12. a. Description
Added section 3.2.31 RE-RWM-12-28 "Interim Radwaste Storage Facility (IRWSF)".

b. Justification
This procedure covers the interim storage of radioactive waste that has already been processed and packaged for disposal in accordance with 10CFR61.

c. Impact
None.

13. a. Description
Revised section 2.0 to state that we will continue to process our waste to meet current regulations in spite of the fact that we are currently storing waste on site.

b. Justification
To address the use of the Interim radwaste storage facility.

c. Impact
None.

14. a. Description
Revised section 9.7 to delete a list of general requirements for waste packaging. It now reads "Waste in it's final form will be packaged in accordance with Title 10 and Title 49 of the Code of federal regulations and in accordance with current burial site criteria as detailed in plant procedures."

b. Justification
The PCP is a program description. It is not intended to provide comprehensive details for packaging waste which are already more appropriately covered in station procedures.

c. Impact
None.

15. a. Description
Revised section 5.1.19 to say that Greater than or equal to 1 percent of the class A concentration limits as determined by 10CFR Part 61.55 Table 1 is considered a significant amount and must be reported on the disposal manifest.

b. Justification
The old value that was considered significant was 1 percent of the class C concentration. The new value is more conservative.

c. Impact
None. Using the more conservative value will have no impact on waste classification.