

Nuclear

GPU Nuclear Corporation

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C321-94-2026

February 25, 1994

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

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Effluent Release Report

Attached is a copy of the Oyster Creek Effluent Release Report for the period covering July, 1993 through December, 1993. This submittal is made in accordance with 10 CFR 50.36a(a)(2) and our Operating License and Technical Specifications.

Additionally, there are four corrected pages for the reporting period of January through June, 1993. These corrections reflect the guidelines of Regulatory Guide 1.21 which does not require reporting of particulate radionuclides with half-lives of less than eight days.

If you should have any questions or require further information, please contact Brenda DeMerchant, OC Licensing Engineer at (609) 971-4642.

Very truly yours,



John J. Barton
Vice President & Director
Oyster Creek

070067

JJB/BDEM:jc

cc: Administrator, Region 1
Senior NRC Resident Inspector
Oyster Creek NRC Project Manager

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OYSTER CREEK NUCLEAR GENERATING STATION
FIRST QUARTER 1993
GASEOUS EFFLUENT ELEVATED RELEASES

FISSION GASES	QUANTITY (ci)
KR85M	1.98E+00
KR87	9.07E+00
XE133	7.36E+00
XE135	1.16E+01
Total Fission Gases Released:	2.90E+01 ci
Gamma Ebar:	0.342 Mev
Average Rate of Release:	3.77E+00 uCi/sec

IODINES	QUANTITY (ci)
I131	5.87E-03
I132	2.87E-02
I133	6.06E-02
I135	1.06E-01
Total Iodines Released:	2.01E-01 ci
Average Rate of Release:	2.61E-02 uCi/sec

PARTICULATES	QUANTITY (ci)
CR51	2.40E-05
MN54	1.24E-05
CO60	2.05E-04
SR89	1.01E-04
SR90	4.65E-06
CS137	4.54E-05
BA140	1.32E-04
CE144	2.15E-05
GROSSA	8.85E-05
Total Particulates Released:	6.34E-04 ci
Average Rate of Release:	8.21E-05 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	3.31E-01
Avg. Rate of Release for H3:	4.31E-02 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
FIRST QUARTER 1993
GASEOUS EFFLUENT GROUND-LEVEL RELEASES

FISSION GASES	QUANTITY (ci)	*
XE133	1.44E-02	
XE135	3.74E-03	
Total Fission Gases Released:	1.81E-02 ci	
Average Rate of Release:	2.35E-03 uCi/sec	

IODINES	QUANTITY (ci)
I131	1.70E-07
I133	1.04E-05
Total Iodines Released:	1.05E-05 ci
Average Rate of Release:	1.37E-06 uCi/sec

PARTICULATES	QUANTITY (ci)
SR89	2.53E-06
Total Particulates Released:	2.53E-06 ci
Average Rate of Release:	3.29E-07 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	0.00E+00
Avg. Rate of Release for H3:	0.00E+00 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
SECOND QUARTER 1993
GASEOUS EFFLUENT ELEVATED RELEASES

FISSION GASES	QUANTITY (ci)
KR85M	2.08E+00
KR87	1.02E+01
XE133	9.61E+00
XE135	1.46E+01
Total Fission Gases Released:	3.65E+01 ci
Gamma Ebar:	0.443 Mev
Average Rate of Release:	4.69E+00 uCi/sec

IODINES	QUANTITY (ci)
I131	1.84E-03
I133	6.31E-03
Total Iodines Released:	8.15E-03 ci
Average Rate of Release:	1.05E-03 uCi/sec

PARTICULATES	QUANTITY (ci)
CR51	9.80E-05
CO60	5.84E-05
SR89	3.90E-04
BA140	5.08E-05
GROSSA	5.91E-07
Total Particulates Released:	5.91E-04 ci
Average Rate of Release:	7.60E-05 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	1.37E+00
Avg. Rate of Release for H3:	1.76E-01 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
SECOND QUARTER 1993
GASEOUS EFFLUENT GROUND-LEVEL RELEASES

FISSION GASES	QUANTITY (ci)
*	
Total Fission Gases Released:	0.00E+00 ci
Average Rate of Release:	0.00E+00 uCi/sec

IODINES	QUANTITY (ci)
I131	3.00E-06
I133	1.18E-05
Total Iodines Released:	1.48E-05 ci
Average Rate of Release:	1.90E-06 uCi/sec

PARTICULATES	QUANTITY (ci)
CR51	4.17E-07
MN54	3.97E-07
SR89	1.05E-05
GROSSA	2.74E-06
Total Particulates Released:	1.39E-05 ci
Average Rate of Release:	1.79E-06 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	0.00E+00
Avg. Rate of Release for H3:	0.00E+00 uCi/sec

*
Quantity of noble gases derived from gross activity.

EXECUTIVE SUMMARY, 1993-2 SEMI-ANNUAL RELEASE REPORT

The Semiannual Effluent Release Report is submitted to the United States Nuclear Regulatory Commission (NRC) every six months in accordance with the Oyster Creek Nuclear Generating Station (OCNGS) Technical Specifications (Tech Specs). It Summarizes the radioactive gaseous and liquid effluents released and solid radioactive wastes shipped from OCNGS.

Attached Tables show that doses based on quantities of radioactive material released were all less than 1 % of the limits allowed by the OCNGS Tech Specs. Limits for the release of radioactive effluents at OCNGS are based upon offsite exposure to members of the general public. These limits were compared to dose projections calculated using the methodology in the Offsite Dose Calculation Manual (ODCM). There were no liquid releases from OCNGS during the period. Solid waste shipments were similar to those of nuclear plants of comparable type, age and size. Concrete was used for solidification material during the reporting period. The report summarizes the fact that all effluents released were within federal regulatory requirements of the OCNGS Technical Specifications.

Included is a description of changes made to the Offsite Dose Calculation Manual (ODCM) and the Process Control Plan (PCP) during the reporting period. Effluent monitoring instruments that were inoperative as per Technical Specification 3.15 for the reporting period are also discussed.

Maximum Offsite Dose Due To Radionuclides in Effluents July-December 1993

<i>Tech.Spec.</i>	<i>3.6.J.1 Liquid Dose WB mrem</i>	<i>3.6.J.1 Organ mrem</i>	<i>3.6.L.1 Air Dose Beta mrem</i>	<i>3.6.L.1 (Gas) Gamma mrem</i>	<i>3.6.K.1 Whole Body mrem</i>	<i>3.6.M.1 (Bone) Organ mrem</i>	<i>3.6.K.1 Skin mrem</i>
<i>July-Dec. Total</i>	<i>0.00E+00</i>	<i>0.00E+00</i>	<i>1.6E-4</i>	<i>1.5E-3</i>	<i>5.3E-4</i>	<i>3.7E-3</i>	<i>1.5E-3</i>
<i>Tech.Spec. Limit</i>	<i>3</i>	<i>10</i>	<i>20</i>	<i>10</i>	<i>500</i>	<i>15</i>	<i>3000</i>
<i>Fraction of Limit</i>	<i>0.00E+00</i>	<i>0.00E+00</i>	<i>8.0E-6</i>	<i>1.5E-4</i>	<i>1.1E-6</i>	<i>2.5E-4</i>	<i>5.0E-7</i>

<i>Tech Spec.Ref.</i>	<i>3.6.N.1 Whole Body mrem</i>	<i>3.6.N.1 (Bone) Organ mrem</i>
<i>1993 Total</i>	<i>7.6E-4</i>	<i>3.7E-3</i>
<i>Tech.Spec.Limit</i>	<i>25</i>	<i>25</i>
<i>Fraction of Annual Limit</i>	<i>3.0E-5</i>	<i>2.5E-4</i>

OFFSITE DOSE CALCULATION MANUAL

As per USNRC generic letter 89-001, the RETS and REMP (Radiological Environmental Monitoring Program) sections of the OCNGS tech specs have been written into the ODCM.

EFFLUENT MONITORS OUT OF SERVICE GREATER THAN 30 DAYS:

There were no effluent Monitors out of service for greater than 30 days during the second half of 1993.

CHANGES TO THE PROCESS CONTROL PLAN:

There were no changes to the Process Control Plan during the second half of 1993.

OYSTER CREEK NUCLEAR GENERATING STATION LIQUID EFFLUENT RELEASES

THIRD AND FOURTH QUARTERS 1993

Oyster Creek Nuclear Generating Station Policy is to strive for a zero liquid discharge of radioactive material. As a result, there were no liquid continuous or batch releases from OCNGS during the second half of 1993.

Effluent and Waste Disposal Supplemental Information

FACILITY: *Oyster Creek Nuclear Generating Station*

LICENSEE: *Owner - Jersey Central Power and Light Company
Operator - GPU Nuclear Corporation*

1.) *Regulatory Limits*

a.) *Fission and Activation Gases*

Technical Specification 3.6.E.1

The gross radioactivity in noble gases discharged from the main condenser air ejector shall not exceed a $0.21/E$ Ci/sec after the holdup line, where E is the average gamma energy (Mev per atomic transformation).

Technical Specification 3.6.K.1

The dose equivalent rate outside of the EXCLUSION AREA due to radioactive noble gas in gaseous effluent shall not exceed 500 mrem/year to the total body or 3000 mrem/year to the skin.

This has been relocated to the ODCM

Technical Specification 3.6.L.1

The air dose outside of the EXCLUSION AREA due to noble gas released in gaseous effluent shall not exceed:

*5 mrad/calendar quarter due to gamma radiation,
10 mrad/calendar quarter due to beta radiation,
10 mrad/calendar year due to gamma radiation, or
20 mrad/calendar year due to beta radiation*

This has been relocated to the ODCM

Technical Specification 3.6.N.1

The annual dose to a MEMBER OF THE PUBLIC due to radiation and radioactive material in effluents from the OCNGS outside of the EXCLUSION AREA shall not exceed 75 mrem to his thyroid or 25 mrem to his total body or to any other organ.

This has been relocated to the ODCM

b. Iodines and Particulates

Technical Specification 3.6.K.2

The dose equivalent rate outside of the EXCLUSION AREA due to H-3, I-131, I-133, and to radioactive material in particulates having half-lives of 8 days or more in gaseous effluents shall not exceed 1500 mrem/year to any body organ when the dose rate due to H-3, Sr-89, Sr-90, and alpha-emitting radionuclides is averaged over no more than 3 months and the dose rate due to other radionuclides is averaged over no more than 31 days.

This has been relocated to the ODCM

Technical Specification 3.6.M.1

The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, and from radionuclides in particulate form having half-lives of 8 days or more in gaseous effluents, outside of the EXCLUSION AREA shall not exceed 7.5 mrem to any body organ per calendar quarter or 15 mrem to any body organ per calendar year.

This has been relocated to the ODCM

c. Liquid Effluents

Technical Specification 3.6.I.1

The concentration of radioactive material, other than noble gases, in liquid effluent in the discharge canal at the Route 9 bridge shall not exceed the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2.

This has been relocated to the ODCM

Technical Specification 3.6.I.2

The concentration of noble gases dissolved or entrained in liquid effluent in the discharge canal at the Route 9 bridge shall not exceed 2×10^{-4} microcuries/milliliter.

This has been relocated to the ODCM

Technical Specification 3.6.J.2

The dose to a MEMBER OF THE PUBLIC due to radioactive material in liquid effluents beyond the outside of the EXCLUSION AREA shall not exceed:

*1.5 mrem to the total body during any calendar quarter,
5 mrem to any body organ during any calendar quarter,
3 mrem to the total body during any calendar year, or
10 mrem to any body organ during any calendar year.*

This has been relocated to the ODCM

2,) Maximum Permissible Concentrations (MPC)

a. Fission and Activation Gases:

Appendix B, Table II, Column 2 of 10 CFR 20

b. Iodines and Particulates:

Appendix B, Table II, Column 2 of 10 CFR 20

c. Liquid Effluents:

Appendix B, Table II, Column 2 of 10 CFR 20, except for dissolved or entrained noble gases where the limit is $2 \times 10^4 \text{ uCi/ml}$

3.) Measurements and Approximation of Total Radioactivity

a. Fission and Activation Gases:

1. Stack

The continuous recording of gross activity and the incorporation of isotopic data obtained from a weekly grab sample analyzed using gamma spectroscopy.

2. Augmented Offgas (AOG) Vent

The continuous recording of gross activity and the incorporation of isotopic data obtained from a weekly grab sample analyzed using gamma spectroscopy.

3. Turbine Building Stack and Feedpump Room Vent

The continuous recording of gross activity and the incorporation of isotopic data obtained from a monthly grab sample analyzed using gamma spectroscopy.

b. Iodines

1. Stack

Filters are changed twice weekly and analyzed using gamma spectroscopy.

2. AOG Vent

Filter are changed twice weekly and analyzed using gamma spectroscopy.

3. Turbine Building Stack and Feedpump Room Vent

Filters are changed twice weekly and analyzed using gamma spectroscopy.

c. Particulates

1. Stack

Filters are changed twice weekly and analyzed using a low background beta counter and gamma spectroscopy.

2. AOG Vent

Filters are changed twice weekly and analyzed using gamma spectroscopy.

3. Turbine Building Stack and Feedpump Room Vent

Filters are changed twice weekly and analyzed using gamma spectroscopy.

d. Liquid Effluents

Analysis per batch release using gamma spectrometry with a germanium detector, a low background beta counter, and a liquid scintillation counter.

OYSTER CREEK NUCLEAR GENERATING STATION
THIRD QUARTER 1993
GASEOUS EFFLUENT ELEVATED RELEASES

*

FISSION GASES	QUANTITY (ci)
KR85M	3.62E+00
KR87	1.53E+01
KR88	1.22E+01
XE135	2.62E+01

Total Fission Gases Released: 5.74E+01 ci
Gamma Ebar: 0.751 Mev
Average Rate of Release: 7.30E+00 uCi/sec

IODINES	QUANTITY (ci)
I131	1.64E-03
I132	2.26E-03
I133	5.90E-03
I135	3.39E-03

Total Iodines Released: 1.32E-02 ci
Average Rate of Release: 1.68E-03 uCi/sec

PARTICULATES	QUANTITY (ci)
CR51	2.40E-05
CO60	2.89E-05
SR89	3.30E-04
BA140	8.63E-05
GROSSA	8.85E-05

Total Particulates Released: 5.58E-04 ci
Average Rate of Release: 7.09E-05 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	1.36E+00

Avg. Rate of Release for H3: 1.72E-01 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
THIRD QUARTER 1993
GASEOUS EFFLUENT GROUND-LEVEL RELEASES

FISSION GASES	QUANTITY (ci)
Total Fission Gases Released:	0.00E+00 ci
Average Rate of Release:	0.00E+00 uCi/sec

IODINES	QUANTITY (ci)
I131	1.65E-06
I133	2.16E-05
Total Iodines Released:	2.32E-05 ci
Average Rate of Release:	2.95E-06 uCi/sec

PARTICULATES	QUANTITY (ci)
SR89	4.42E-06
Total Particulates Released:	4.42E-06 ci
Average Rate of Release:	5.62E-07 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	0.00E+00
Avg. Rate of Release for H3:	0.00E+00 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
FOURTH QUARTER 1994
GASEOUS EFFLUENT ELEVATED RELEASES

FISSION GASES	QUANTITY (ci)
KR85M	2.79E+01
KR87	6.30E+00
KR88	1.47E+01
XE135	4.59E+01
Total Fission Gases Released:	9.48E+01 ci
Gamma Ebar:	0.522 Mev
Average Rate of Release:	1.21E+01 uCi/sec

IODINES	QUANTITY (ci)
I131	5.68E-04
I133	2.96E-03
I135	1.80E-03
Total Iodines Released:	5.33E-03 ci
Average Rate of Release:	6.78E-04 uCi/sec

PARTICULATES	QUANTITY (ci)
CR51	2.32E-05
CO60	1.32E-04
SR89	3.25E-04
SR90	9.84E-06
CS137	1.96E-05
BA140	1.80E-04
Total Particulates Released:	6.89E-04 ci
Average Rate of Release:	8.76E-05 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	6.19E-01
Avg. Rate of Release for H3:	7.87E-02 uCi/sec

*
Quantity of noble gases derived from gross activity.

OYSTER CREEK NUCLEAR GENERATING STATION
FOURTH QUARTER 1994
GASEOUS EFFLUENT GROUND-LEVEL RELEASES

FISSION GASES	QUANTITY (ci)
Total Fission Gases Released:	0.00E+00 ci
Average Rate of Release:	0.00E+00 uCi/sec

IODINES	QUANTITY (ci)
I133	3.96E-06
Total Iodines Released:	3.96E-06 ci
Average Rate of Release:	5.04E-07 uCi/sec

PARTICULATES	QUANTITY (ci)
SR89	3.45E-06
GROSSA	1.42E-05
Total Particulates Released:	1.75E-05 ci
Average Rate of Release:	2.22E-06 uCi/sec

RADIONUCLIDE	QUANTITY (ci)
H3	0.00E+00
Avg. Rate of Release for H3:	0.00E+00 uCi/sec

*
Quantity of noble gases derived from gross activity.

Solid Waste Shipped Offsite for Disposal
During Period From 07/1/93 to 12/31/93

Report Date 1/20/94

WASTE STREAM: DRY ACTIVE WASTE SENT TO A REPROCESSOR

WASTE CLASS	VOLUME		CURIES SHIPPED	% ERROR (Ci)
	Ft ³	M ³		
A	4,529	128.17	1.08	± 25%
B	0	0	0	± 25%
C	0	0	0	± 25%
All	4,529	128.17	1.08	± 25%

Note: This material was sent to a Reprocessor for further Volume Reduction prior to burial.

Estimates of Major Nuclides by Waste Class and Stream
with 1% Cutoff

1/20/94

WASTE STREAM: DRY ACTIVE WASTE SENT TO A REPROCESSOR

<u>Waste Class</u>	<u>Nuclide Name</u>	<u>Percent Abundance</u>	<u>Curies</u>
A (All)	Fe-55	49.00%	5.29 E-1
	Co-60	33.70%	3.64 E-1
	Cs-137	7.46%	8.06 E-2
	Mn-54	4.33%	4.68 E-2
	Cr-51	1.29%	1.39 E-2
	Zn-65	1.24%	1.34 E-2
	Ni-63	0.68%	7.34 E-3
	Sr-90	0.06%	6.48 E-4
	Pu-241	0.04%	4.32 E-4
	Ni-59	0.01%	1.08 E-4
	C-14	0.00%	-0-
	Cm-242	0.00%	-0-
	H-3	0	LLD(<6.25E-4 uCi/CC)
	Tc-99	0	LLD(<6.25E-5 uCi/CC)
	I-129	0	LLD(<1.53E-4 uCi/CC)

Solid Waste Shipped Offsite for Disposal
 ** During Period From 07/01/93 to 12/31/93 **
 Report Date :01/20/94
 Waste Stream :Resins, Filters, & Evap Bottoms.
 RADMAN Waste Type(s):
 FM-S-CM SLDG170
 FM-D-NA ALPS RE
 EB-S-CM BOTTOMS
 BR-D-NA RESIN

Waste Class	Volume Ft^3	M^3	Curies Shipped	% Error (Ci)
-----	-----	-----	-----	-----
A	1642.2	46.5	1.33E+02	+/- 25%
B	512.4	14.5	5.38E+01	+/- 25%
C	.0	.0	0.00E+00	+/- 25%
-----	-----	-----	-----	-----
All	2154.6	61.0	1.87E+02	+/- 25%

*-Combined Waste Type Shipment, Major Volume Waste Type Shown

**** Estimates of Major Nuclides by Waste Class and Stream ****
Waste Stream:Resins, Filters, & Evap Bottoms with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
A	Fe-55	42.040%	5.60E+01
	Co-60	38.794%	5.17E+01
	Cs-137	8.371%	1.11E+01
	Mn-54	4.537%	6.04E+00
	Cr-51	1.259%	1.68E+00
	Zn-65	1.122%	1.49E+00
	Ni-63	1.005%	1.34E+00
	Pu-241	.303%	4.03E-01
	C-14	.229%	3.05E-01
	Sr-90	.070%	9.28E-02
	H-3	.030%	3.97E-02
	Ni-59	.014%	1.92E-02
	Cm-242	.000%	4.33E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

**** Estimates of Major Nuclides by Waste Class and Stream ****
Waste Stream: Residues, Filters, & Evap Bottoms with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
B	Fe-55	37.792%	2.03E+01
	Co-60	25.537%	1.37E+01
	Cs-137	25.477%	1.37E+01
	Mn-54	4.567%	2.46E+00
	Cs-134	1.934%	1.04E+00
	Ni-63	1.211%	6.51E-01
	Co-58	1.114%	5.99E-01
	Zn-65	1.066%	5.73E-01
	Sr-90	.060%	3.22E-02
	Pu-241	.057%	3.07E-02
	Ni-59	.015%	8.33E-03
	H-3	.005%	2.80E-03
	Cm-242	.000%	1.40E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	C-14	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

**** Estimates of Major Nuclides by Waste Class and Stream ****
Waste Stream:Resins, Filters, & Evap Bottoms with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
All	Fe-55	40.818%	7.63E+01
	Co-60	34.981%	6.54E+01
	Cs-137	13.291%	2.48E+01
	Mn-54	4.546%	8.50E+00
	Cr-51	1.136%	2.12E+00
	Zn-65	1.106%	2.07E+00
	Cs-134	1.080%	2.02E+00
	Ni-63	1.064%	1.99E+00
	Pu-241	.232%	4.34E-01
	C-14	.163%	3.05E-01
	Sr-90	.067%	1.25E-01
	H-3	.023%	4.25E-02
	Ni-59	.015%	2.76E-02
	Cm-242	.000%	5.73E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

Solid Waste Shipped Offsite for Disposal
 ** During Period From 07/01/93 to 12/31/93 **
 Report Date :01/20/94
 Waste Stream :Irradiated Components.
 RADMAN Waste Type(s):
 None Selected.

Waste Class	Volume Ft^3	M^3	Curies Shipped	% Error (Ci)
A	.0	.0	0.00E+00	+/- 25%
B	.0	.0	0.00E+00	+/- 25%
C	.0	.0	0.00E+00	+/- 25%
All	.0	.0	0.00E+00	+/- 25%

*-Combined Waste Type Shipment, Major Volume Waste Type Shown

Solid Waste Shipped Offsite for Disposal
 ** During Period From 07/01/93 to 12/31/93 **
 Report Date :01/20/94
 Waste Stream :Other Waste.
 RADMAN Waste Type(s):
 None Selected.

Waste Class	Volume Ft^3	M^3	Curies Shipped	% Error (Ci)
A	.0	.0	0.00E+00	+/- 25%
B	.0	.0	0.00E+00	+/- 25%
C	.0	.0	0.00E+00	+/- 25%
All	.0	.0	0.00E+00	+/- 25%

*-Combined Waste Type Shipment, Major Volume Waste Type Shown

Solid Waste Shipped Offsite for Disposal
 ** During Period From 07/01/93 to 12/31/93 **

Report Date :01/20/94

Waste Stream :Sum of All 4 Categories

RADMAN Waste Type(s):

DAW-U-NA HITRASH

FM-S-CM SLDG170

FM-D-NA ALPS RE

EB-S-CM BOTTOMS

BR-D-NA RESIN

Waste Class	Volume Ft^3	M^3	Curies Shipped	% Error (Ci)
A	1642.2	46.5	1.33E+02	+/- 25%
B	512.4	14.5	5.38E+01	+/- 25%
C	.0	.0	0.00E+00	+/- 25%
All	2154.6	61.0	1.87E+02	+/- 25%

*-Combined Waste Type Shipment, Major Volume Waste Type Shown

** Estimates of Major Nuclides by Waste Class and Stream **
Waste Stream: Sum of All 4 Categories with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
A	Fe-55	42.040%	5.60E+01
	Co-60	38.794%	5.17E+01
	Cs-137	8.371%	1.11E+01
	Mn-54	4.537%	6.04E+00
	Cr-51	1.259%	1.68E+00
	Zn-65	1.122%	1.49E+00
	Ni-63	1.005%	1.34E+00
	Pu-241	.303%	4.03E-01
	C-14	.229%	3.05E-01
	Sr-90	.070%	9.28E-02
	H-3	.030%	3.97E-02
	Ni-59	.014%	1.92E-02
	Cm-242	.000%	4.33E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

** Estimates of Major Nuclides by Waste Class and Stream **
Waste Stream:Sum of All 4 Categories with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
B	Fe-55	37.792%	2.03E+01
	Co-60	25.537%	1.37E+01
	Cs-137	25.477%	1.37E+01
	Mn-54	4.567%	2.46E+00
	Cs-134	1.934%	1.04E+00
	Ni-63	1.211%	6.51E-01
	Co-58	1.114%	5.99E-01
	Zn-65	1.066%	5.73E-01
	Sr-90	.060%	3.22E-02
	Pu-241	.057%	3.07E-02
	Ni-59	.015%	8.33E-03
	H-3	.005%	2.80E-03
	Cm-242	.000%	1.40E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	C-14	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

** Estimates of Major Nuclides by Waste Class and Stream **

Waste Stream:Sum of All 4 Categories with 1.0% Cutoff.

Waste Class	Nuclide Name	Percent Abundance	Curies
-----	-----	-----	-----
All	Fe-55	40.818%	7.63E+01
	Co-60	34.981%	6.54E+01
	Cs-137	13.291%	2.48E+01
	Mn-54	4.546%	8.50E+00
	Cr-51	1.136%	2.12E+00
	Zn-65	1.106%	2.07E+00
	Cs-134	1.080%	2.02E+00
	Ni-63	1.064%	1.99E+00
	Pu-241	.232%	4.34E-01
	C-14	.163%	3.05E-01
	Sr-90	.067%	1.25E-01
	H-3	.023%	4.25E-02
	Ni-59	.015%	2.76E-02
	Cm-242	.000%	5.73E-04
	I-129	.000%	0.00E+00
	Tc-99	.000%	0.00E+00
	Nb-94	.000%	0.00E+00

SOLID WASTE DISPOSITION SUMMARY

<u>NUMBER OF SHIPMENTS</u>	<u>MODE OF TRANSPORTATION</u>	<u>DESTINATION</u>
12	Truck	Barnwell, SC
4	Truck	Oak Ridge, TN
0	Truck	Richland, WA
0	Truck	Beatty, NV

OYSTER CREEK 380 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS A

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	0	0	0	4	4	0	8
NNE	SSW	0	0	0	1	1	0	2
NE	SW	0	0	0	1	0	0	1
ENE	WSW	0	0	2	3	2	0	7
E	W	1	0	1	5	0	0	7
ESE	WNW	0	0	3	12	5	2	22
SE	NW	0	0	3	9	8	2	22
SSE	NNW	0	0	1	0	0	0	1
S	N	0	1	2	2	0	0	5
SSW	NNE	0	1	0	1	0	0	2
SW	NE	0	0	1	9	4	0	14
WSW	ENE	0	1	2	6	0	0	9
W	E	0	0	2	4	1	0	7
WNW	ESE	0	1	1	2	1	0	5
NW	SE	0	0	1	0	0	1	2
NNW	SSE	0	1	1	3	0	0	5
TOTAL		1	5	20	62	26	5	119

OYSTER CREEK 380 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS B

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	0	0	3	11	13	0	27
NNE	SSW	0	0	1	13	2	1	17
NE	SW	0	0	3	6	3	0	12
ENE	WSW	0	0	3	7	4	1	15
E	W	0	0	3	13	6	3	25
ESE	WNW	0	0	5	33	7	5	50
SE	NW	1	0	6	25	7	12	51
SSE	NNW	0	0	5	8	9	2	24
S	N	0	0	1	1	1	0	3
SSW	NNE	0	1	1	1	1	0	4
SW	NE	0	0	6	16	3	4	29
WSW	ENE	0	1	21	13	1	1	37
W	E	0	0	6	1	0	0	7
WNW	ESE	0	0	9	2	1	0	12
NW	SE	0	0	10	4	0	0	14
NNW	SSE	0	0	1	10	1	0	12
TOTAL		1	2	84	164	59	29	339

OYSTER CREEK 60 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS C

SECTOR	WINDS TO FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	0	0	5	30	12	6	53
NNE	SSW	0	1	7	12	2	1	23
NE	SW	0	1	8	17	5	0	31
ENE	WSW	0	0	8	11	6	1	26
E	W	0	3	11	19	10	7	50
ESE	WNW	0	1	17	28	22	20	88
SE	NW	0	0	19	41	26	9	95
SSE	NNW	0	0	12	21	10	2	45
S	N	0	0	8	5	5	1	19
SSW	NNE	0	0	3	4	0	0	7
SW	NE	0	3	16	11	7	3	40
WSW	ENE	0	2	33	15	0	3	53
W	E	0	2	25	7	1	0	35
WNW	ESE	0	1	19	4	1	0	25
NW	SE	0	3	14	3	1	0	21
NNW	SSE	0	1	13	12	0	0	26
TOTAL		0	18	218	240	108	53	637

OYSTER CREEK 380 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS D

SECTOR	WINDS TO FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	5	20	74	87	56	26	268
NNE	SSW	3	24	59	95	79	50	310
NE	SW	5	13	34	48	23	5	128
ENE	WSW	0	19	50	58	38	21	186
E	W	4	12	33	93	55	54	251
ESE	WNW	7	9	59	110	87	78	350
SE	NW	3	13	57	80	69	63	285
SSE	NNW	3	28	71	52	32	31	217
S	N	3	24	40	50	26	9	152
SSW	NNE	2	38	58	66	31	5	200
SW	NE	6	43	92	88	81	29	339
WSW	ENE	4	44	79	57	28	59	271
W	E	2	38	65	48	21	16	190
WNW	ESE	3	38	79	53	17	14	204
NW	SE	2	32	81	35	7	8	165
NNW	SSE	5	27	92	53	12	13	202
TOTAL		57	422	1023	1073	662	481	3718

OYSTER CREEK 30 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS E

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	5	14	38	45	37	21	160
NNE	SSW	1	5	42	97	95	28	268
NE	SW	3	10	15	75	103	30	236
ENE	WSW	3	13	14	47	51	12	140
E	W	3	8	17	54	59	19	160
ESE	WNW	2	10	23	56	67	10	168
SE	NW	2	12	26	60	68	16	184
SSE	NNW	3	8	25	57	50	11	154
S	N	3	11	30	35	11	0	90
SSW	NNE	4	13	26	15	1	1	60
SW	NE	4	13	28	27	6	3	81
WSW	ENE	5	5	20	19	18	7	74
W	E	0	11	20	21	15	10	77
WNW	ESE	0	12	15	22	7	6	62
NW	SE	2	16	25	16	14	11	84
NNW	SSE	1	7	35	26	4	5	78
TOTAL		41	168	399	672	606	190	2076

OYSTER CREEK 380 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS F

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	2	5	15	16	2	1	41
NNE	SSW	1	3	18	31	22	5	80
NE	SW	2	10	12	50	48	20	142
ENE	WSW	5	10	12	33	37	20	117
E	W	2	6	19	45	51	25	148
ESE	WNW	0	6	16	42	33	12	109
SE	NW	2	4	14	23	29	6	78
SSE	NNW	1	5	16	37	28	6	93
S	N	3	9	26	26	24	3	91
SSW	NNE	2	6	16	29	2	0	55
SW	NE	3	10	17	25	4	1	60
WSW	ENE	0	6	11	4	0	0	21
W	E	3	4	3	1	0	0	11
WNW	ESE	0	3	10	2	0	0	15
NW	SE	0	5	9	1	0	0	15
NNW	SSE	1	8	15	4	1	0	29
TOTAL		27	100	229	369	281	99	1105

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS G

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	2	9	10	10	4	0	35
NNE	SSW	7	6	10	13	14	0	50
NE	SW	4	13	13	10	16	12	68
ENE	WSW	3	11	16	19	16	8	73
E	W	1	9	12	26	19	9	76
ESE	WNW	3	6	14	27	20	3	73
SE	NW	6	12	13	16	5	1	53
SSE	NNW	5	10	21	18	12	0	66
S	N	1	7	15	21	15	3	62
SSW	NNE	4	1	13	34	7	0	59
SW	NE	2	10	15	8	1	0	36
WSW	ENE	3	7	5	16	0	0	31
W	E	1	6	5	6	1	0	19
WNW	ESE	3	12	9	5	0	0	29
NW	SE	1	2	2	1	0	0	6
NNW	SSE	4	14	10	0	0	0	28
TOTAL		50	135	183	230	130	36	764

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS ALL

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	14	48	145	203	128	54	592
NNE	SSW	12	39	137	262	215	85	750
NE	SW	14	47	85	207	198	67	618
ENE	WSW	11	53	105	178	154	63	564
E	W	11	38	96	255	200	117	717
ESE	WNW	12	32	137	308	241	130	860
SE	NW	14	41	138	254	212	109	768
SSE	NNW	12	51	151	193	141	52	600
S	N	10	52	122	140	82	16	422
SSW	NNE	12	60	117	150	42	6	387
SW	NE	15	79	175	184	106	40	599
WSW	ENE	12	66	171	130	47	70	496
W	E	6	61	126	88	39	26	346
WNW	ESE	6	67	142	90	27	20	352
NW	SE	5	58	142	60	22	20	307
NNW	SSE	11	58	167	108	18	18	380
TOTAL		177	850	2156	2810	1872	893	8758

Hours of Missing/Invalid Data: 2

OYSTER CREEK 33 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS A

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	3	9	52	51	0	0	115
NNE	SSW	4	10	43	30	2	0	89
NE	SW	1	8	53	3	0	0	65
ENE	WSW	0	12	30	6	0	0	48
E	W	3	15	55	18	1	0	92
ESE	WNW	2	20	100	30	2	0	154
SE	NW	10	33	110	28	3	0	184
SSE	NNW	8	23	67	14	1	0	113
S	N	10	12	32	4	0	0	58
SSW	NNE	7	27	14	0	0	0	48
SW	NE	7	41	52	1	0	0	101
WSW	ENE	7	34	67	3	0	0	111
W	E	4	36	51	0	0	0	91
WNW	ESE	1	31	33	2	0	0	67
NW	SE	2	21	65	3	0	0	91
NNW	SSE	1	6	47	3	1	0	58
TOTAL		70	338	871	196	10	0	1485

OYSTER CREEK 33 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS B

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	0	5	21	6	0	0	32
NNE	SSW	1	10	16	17	0	0	44
NE	SW	0	14	10	4	0	0	28
ENE	WSW	3	15	15	3	0	0	36
E	W	1	9	19	13	2	0	44
ESE	WNW	1	11	26	8	2	0	48
SE	NW	1	19	24	6	2	0	52
SSE	NNW	4	15	13	2	0	0	34
S	N	2	14	8	0	0	0	24
SSW	NNE	4	10	6	0	0	0	20
SW	NE	3	16	11	0	0	0	30
WSW	ENE	5	27	9	1	0	0	42
W	E	0	31	9	0	0	0	40
WNW	ESE	2	17	8	2	0	0	29
NW	SE	1	15	19	1	0	0	36
NNW	SSE	1	5	23	1	0	0	30
TOTAL		29	233	237	64	6	0	569

JOINT FREQUENCY TABLES
OYSTER CREEK 33 FOOT DATA
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS C

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	0	7	14	4	1	0	26
NNE	SSW	0	7	15	5	0	0	27
NE	SW	0	5	9	0	1	0	15
ENE	WSW	0	8	5	2	0	0	15
E	W	0	5	7	2	0	0	14
ESE	WNW	0	12	8	5	0	0	25
SE	NW	1	11	15	2	0	0	29
SSE	NNW	2	12	9	1	0	0	24
S	N	4	10	2	1	0	0	17
SSW	NNE	1	4	3	1	0	0	9
SW	NE	5	9	10	0	0	0	24
WSW	ENE	4	18	5	0	0	0	27
W	E	1	10	7	0	0	0	18
WNW	ESE	0	6	5	0	0	0	11
NW	SE	0	10	6	0	0	0	16
NNW	SSE	0	2	7	1	0	0	10
TOTAL		18	136	127	24	2	0	307

JOINT FREQUENCY TABLES
OYSTER CREEK 33 FOOT DATA
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS D

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	6	56	71	27	1	0	161
NNE	SSW	11	51	75	39	5	0	181
NE	SW	19	37	24	3	0	0	83
ENE	WSW	8	45	33	7	0	0	93
E	W	14	54	58	15	1	0	142
ESE	WNW	11	65	85	35	3	0	199
SE	NW	26	66	66	24	0	0	182
SSE	NNW	24	59	34	12	0	1	130
S	N	32	49	19	3	0	0	103
SSW	NNE	37	37	40	3	0	0	117
SW	NE	49	64	78	1	0	0	192
WSW	ENE	24	84	31	23	10	0	172
W	E	22	57	34	8	0	0	121
WNW	ESE	12	57	46	9	0	0	124
NW	SE	17	66	19	6	0	0	108
NNW	SSE	8	73	50	7	3	1	142
TOTAL		320	920	763	222	23	2	2250

JOINT FREQUENCY TABLES
OYSTER CREEK 33 FOOT DATA
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS E

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	27	53	35	10	1	0	126
NNE	SSW	35	111	78	22	4	0	250
NE	SW	37	134	77	1	0	0	249
ENE	WSW	45	162	27	2	0	0	236
E	W	34	116	30	5	0	0	185
ESE	WNW	47	98	51	8	0	0	204
SE	NW	53	103	46	3	0	0	205
SSE	NNW	48	83	26	1	0	0	158
S	N	49	31	5	4	0	0	89
SSW	NNE	27	17	10	1	0	0	55
SW	NE	33	29	9	1	3	0	75
WSW	ENE	19	31	7	6	2	0	65
W	E	17	39	19	1	1	0	77
WNW	ESE	8	21	15	2	0	0	46
NW	SE	14	25	13	6	0	0	58
NNW	SSE	15	28	13	4	3	0	63
TOTAL		508	1081	461	77	14	0	2141

JOINT FREQUENCY TABLES
OYSTER CREEK 33 FOOT DATA
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS F

SECTOR TO	WINDS FROM	WIND SPEED						TOTAL
		1-3	4-7	8-12	13-18	19-24	>24	
N	S	21	11	2	0	0	0	34
NNE	SSW	36	27	0	0	0	0	63
NE	SW	38	39	1	0	0	0	78
ENE	WSW	53	102	0	0	0	0	155
E	W	56	53	6	0	0	0	115
ESE	WNW	44	25	2	0	0	0	71
SE	NW	57	36	4	0	0	0	97
SSE	NNW	38	46	0	0	0	0	84
S	N	18	10	0	0	0	0	28
SSW	NNE	5	1	0	0	0	0	6
SW	NE	6	1	0	0	0	0	7
WSW	ENE	9	3	0	0	0	0	12
W	E	4	1	0	0	0	0	5
WNW	ESE	5	0	0	0	0	0	5
NW	SE	7	2	0	0	0	0	9
NNW	SSE	15	6	0	0	0	0	21
TOTAL		412	363	15	0	0	0	790

OYSTER CREEK 33 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS G

		WIND SPEED						TOTAL
SECTOR TO	WINDS FROM	1-3	4-7	8-12	13-18	19-24	>24	
N	S	16	1	0	0	0	0	17
NNE	SSW	30	9	0	0	0	0	39
NE	SW	61	15	0	0	0	0	76
ENE	WSW	201	95	0	0	0	0	296
E	W	207	47	1	1	0	0	256
ESE	WNW	136	8	1	0	0	0	145
SE	NW	128	22	0	0	0	0	150
SSE	NNW	77	34	0	0	0	0	111
S	N	20	7	0	0	0	0	27
SSW	NNE	9	1	0	0	0	0	10
SW	NE	10	3	0	0	0	0	13
WSW	ENE	2	3	0	0	0	0	5
W	E	2	0	0	0	0	0	2
WNW	ESE	4	0	0	0	0	0	4
NW	SE	4	0	0	0	0	0	4
NNW	SSE	12	0	0	0	0	0	12
TOTAL		919	245	2	1	0	0	1167

OYSTER CREEK 33 FOOT DATA
JOINT FREQUENCY TABLES
VERSION: 93.1 PRINTED 02-10-1994

HOURS AT EACH WIND SPEED AND DIRECTION
PERIOD OF RECORD 93010100 TO 93123123
STABILITY CLASS ALL

		WIND SPEED						TOTAL
SECTOR TO	WINDS FROM	1-3	4-7	8-12	13-18	19-24	>24	
N	S	73	142	195	98	3	0	511
NNE	SSW	117	225	227	113	11	0	693
NE	SW	156	252	174	11	1	0	594
ENE	WSW	310	439	110	20	0	0	879
E	W	315	299	176	54	4	0	848
ESE	WNW	241	239	273	86	7	0	846
SE	NW	276	290	265	63	5	0	899
SSE	NNW	201	272	149	30	1	1	654
S	N	135	133	66	12	0	0	346
SSW	NNE	90	97	73	5	0	0	265
SW	NE	113	163	160	3	3	0	442
WSW	ENE	70	200	119	33	12	0	434
W	E	50	174	120	9	1	0	354
WNW	ESE	32	132	107	15	0	0	286
NW	SE	45	139	122	16	0	0	322
NNW	SSE	52	120	140	16	7	1	336
TOTAL		2276	3316	2476	584	55	2	8709

Hours of Missing/Invalid Data: 51