

License No. DPR-36
Maine Yankee Atomic Power Company
Independent Spent Fuel Storage Installation

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January-December 2006



April 2007

Prepared by:

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Radiological Safety & Control Services

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Stratham, NH 03885-2468**

1.0 INTRODUCTION

Tables 1 and 2 summarize the quantity of radioactive gaseous and liquid effluents, respectively, for each quarter of 2006. Table 3 states that waste was shipped off-site for burial or disposal during the year 2006. Table 4 contains supplementary information.

Appendices A through D, indicate the status of reportable items per the requirements of the Off-site Dose Calculation Manual (ODCM) sections 2.1.5, 2.2.6, 2.3.3, 2.3.4, 2.5 and Appendix C.

Changes to the ODCM made during the year 2006 are summarized in Appendix E. A complete copy of the revised manual is attached as well as the specific pages that changed.

TABLE 1A

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
First and Second Quarters, 2006
Gaseous Effluents-Summation of All Releases

	Unit	1 st Quarter	2 nd Quarter	Est. Total Error, %
A. Fission and Activation Gases				
1. Total Release	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
B. Iodines				
1. Total Iodine-131	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
C. Particulates				
1. Particulates with T-1/2 > 8 days	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
4. Gross alpha radioactivity	Ci	N/A*	N/A*	
D. Tritium				
1. Total release	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	

N/D*= Not Detected

N/A*= Not Applicable

** = Calculated for the time period in which the releases actually occurred. All others are calculated for the standard 91day period

(particulate release is an unscheduled release, which is reported in Table 4)

TABLE 1A

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
Third and Fourth Quarters, 2006
Gaseous Effluents-Summation of All Releases

	Unit	3 rd Quarter	4 th Quarter	Est. Total Error, %
A. Fission and Activation Gases				
1. Total Release	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
B. Iodines				
1. Total Iodine-131	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
C. Particulates				
1. Particulates with T-1/2 > 8 days	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	
4. Gross alpha radioactivity	Ci	N/A*	N/A*	
D. Tritium				
1. Total release	Ci	N/A*	N/A*	N/A
2. Average release rate for period	uCi/sec	N/A*	N/A*	
3. Percent of regulatory limit	%	N/A*	N/A*	

N/D*= Not Detected
N/A*= Not Applicable

TABLE 1B

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
First and Second Quarters, 2006
Gaseous Effluents-Elevated Release

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter
1. Fission Gases					
Krypton-85	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-85m	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-87	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-88	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-133	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135m	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-138	Ci	N/A*	N/A*	N/A*	N/A*
Unidentified	Ci	N/A*	N/A*	N/A*	N/A*
Total for period	Ci	N/A*	N/A*	N/A*	N/A*
2. Iodines					
Iodine-131	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-133	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-135	Ci	N/A*	N/A*	N/A*	N/A*
Total for period	Ci	N/A*	N/A*	N/A*	N/A*
3. Particulates					
Strontium-89	Ci	N/A*	N/A*	N/A*	N/A*
Strontium-90	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-134	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-137	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-60	Ci	N/A*	N/A*	N/A*	N/A*
Barium-Lanthanum-140	Ci	N/A*	N/A*	N/A*	N/A*
Others-					
Plutonium-238	Ci	N/A*	N/A*	N/A*	N/A*
Curium-243,244	Ci	N/A*	N/A*	N/A*	N/A*
Uranium-234	Ci	N/A*	N/A*	N/A*	N/A*
Uranium-238	Ci	N/A*	N/A*	N/A*	N/A*
Thorium-232	Ci	N/A*	N/A*	N/A*	N/A*
Radium-226	Ci	N/A*	N/A*	N/A*	N/A*

N/D*= Not Detected
N/A*= Not Applicable

TABLE 1B

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
Third and Fourth Quarters, 2006
Gaseous Effluents-Elevated Release

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		3rd Quarter	4th Quarter	3rd Quarter	4th Quarter
1. Fission Gases					
Krypton-85	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-85m	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-87	Ci	N/A*	N/A*	N/A*	N/A*
Krypton-88	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-133	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135m	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-138	Ci	N/A*	N/A*	N/A*	N/A*
Unidentified	Ci	N/A*	N/A*	N/A*	N/A*
Total for period	Ci	N/A*	N/A*	N/A*	N/A*
2. Iodines					
Iodine-131	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-133	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-135	Ci	N/A*	N/A*	N/A*	N/A*
Total for period	Ci	N/A*	N/A*	N/A*	N/A*
3. Particulates					
Strontium-89	Ci	N/A*	N/A*	N/A*	N/A*
Strontium-90	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-134	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-137	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-60	Ci	N/A*	N/A*	N/A*	N/A*
Barium-Lanthanum-140	Ci	N/A*	N/A*	N/A*	N/A*
Others-					
Plutonium-238	Ci	N/A*	N/A*	N/A*	N/A*
Curium-243,244	Ci	N/A*	N/A*	N/A*	N/A*
Uranium-234	Ci	N/A*	N/A*	N/A*	N/A*
Uranium-238	Ci	N/A*	N/A*	N/A*	N/A*
Thorium-232	Ci	N/A*	N/A*	N/A*	N/A*
Radium-226	Ci	N/A*	N/A*	N/A*	N/A*

N/D*= Not Detected

N/A*= Not Applicable

TABLE 1C

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
January-December 2006
Gaseous Effluents-Ground Level Release

There are no gaseous effluents associated with the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI)

TABLE 2A

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
First and Second Quarters, 2006
Liquid Effluents-Summation of All Releases

	Unit	1 st Quarter	2 nd Quarter	Est. Total Error, %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	N/A*	N/A*	N/A
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A*	
3. Percent of applicable limit	%	N/A*	N/A*	
B. Tritium				
1. Total Release	Ci	N/A*	N/A*	N/A
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A*	
3. Percent of applicable limit	%	N/A*	N/A*	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	N/A*	N/A*	N/A
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A*	
3. Percent of applicable limit	%	N/A*	N/A*	
D. Gross Alpha Radioactivity				
1. Total release	Ci	N/A	N/A	N/A
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A	
E. Volume of Waste Released (prior to dilution)	Liters	N/A*	N/A*	
F. Volume of Dilution Water Used During Period	Liters	N/A*	N/A*	

N/D*= Not Detected
N/A*= Not Applicable

TABLE 2A

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
Third and Fourth Quarters, 2006
Liquid Effluents-Summation of All Releases

	Unit	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	N/A	N/A	N/A
2. Average diluted concentration during period	.uCi/ml	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	
B. Tritium				
1. Total Release	Ci	N/A	N/A	N/A
2. Average diluted concentration during period	.uCi/ml	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	N/A	N/A	N/A
2. Average diluted concentration during period	.uCi/ml	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	
D. Gross Alpha Radioactivity				
1. Total release	Ci	N/A	N/A	N/A
2. Average diluted concentration during period	.uCi/ml	N/A	N/A	
E. Volume of Waste Released (prior to dilution)				
	Liters	N/A	N/A	N/A
F. Volume of Dilution Water Used During Period				
	Liters	N/A	N/A	N/A

N/D*= Not Detected

N/A*= Not Applicable

TABLE 2B

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
First and Second Quarters, 2006
Liquid Effluents

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter
Strontium-89	Ci	N/A*	N/A*	N/A*	N/A*
Strontium-90	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-134	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-137	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-131	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-58	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-60	Ci	N/A*	N/A*	N/A*	N/A*
Iron-59	Ci	N/A*	N/A*	N/A*	N/A*
Zinc-65	Ci	N/A*	N/A*	N/A*	N/A*
Manganese-54	Ci	N/A*	N/A*	N/A*	N/A*
Chromium-51	Ci	N/A*	N/A*	N/A*	N/A*
Zirconium-Niobium-95	Ci	N/A*	N/A*	N/A*	N/A*
Molybdenum-99	Ci	N/A*	N/A*	N/A*	N/A*
Technetium-99m	Ci	N/A*	N/A*	N/A*	N/A*
Barium-Lanthanum-140	Ci	N/A*	N/A*	N/A*	N/A*
Cerium-141	Ci	N/A*	N/A*	N/A*	N/A*
Others- Iron-55	Ci	N/A*	N/A*	N/A*	N/A*
Antimony-125	Ci	N/A*	N/A*	N/A*	N/A*
Unidentified	Ci	N/A*	N/A*	N/A*	N/A*
Total for period (above)	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-133	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135	Ci	N/A*	N/A*	N/A*	N/A*

N/D*= Not Detected
N/A*= Not Applicable

TABLE 2B

Maine Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
Third and Fourth Quarters, 2006
Liquid Effluents

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		3rd Quarter	4th Quarter	3rd Quarter	4th Quarter
Strontium-89	Ci	N/A*	N/A*	N/A*	N/A*
Strontium-90	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-134	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-137	Ci	N/A*	N/A*	N/A*	N/A*
Iodine-131	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-58	Ci	N/A*	N/A*	N/A*	N/A*
Cobalt-60	Ci	N/A*	N/A*	N/A*	N/A*
Iron-59	Ci	N/A*	N/A*	N/A*	N/A*
Zinc-65	Ci	N/A*	N/A*	N/A*	N/A*
Manganese-54	Ci	N/A*	N/A*	N/A*	N/A*
Chromium-51	Ci	N/A*	N/A*	N/A*	N/A*
Zirconium-Niobium-95	Ci	N/A*	N/A*	N/A*	N/A*
Molybdenum-99	Ci	N/A*	N/A*	N/A*	N/A*
Technetium-99m	Ci	N/A*	N/A*	N/A*	N/A*
Barium-Lanthanum-140	Ci	N/A*	N/A*	N/A*	N/A*
Cerium-141	Ci	N/A*	N/A*	N/A*	N/A*
Others- Iron-55	Ci	N/A*	N/A*	N/A*	N/A*
Antimony-125	Ci	N/A*	N/A*	N/A*	N/A*
Unidentified	Ci	N/A*	N/A*	N/A*	N/A*
Total for period (above)	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-133	Ci	N/A*	N/A*	N/A*	N/A*
Xenon-135	Ci	N/A*	N/A*	N/A*	N/A*

N/D*= Not Detected
N/A*= Not Applicable

TABLE 3
Maine Yankee Atomic Power Station
Effluent and Waste Disposal Semiannual Report
First Half, 2006
Solid Waste and Irradiated Fuel Shipments

A. Solid Waste Shipped Off-Site for Burial or Disposal (Not Irradiated Fuel).

1. Type of Waste.	Unit	6-Month Period	Est. Total Error, %
a. Spent resins, filter sludges, etc.	Cu. M.	0.0	
	Ci.	0.0	+/- 25
b. Dry compressible waste, contaminated equipment, DAW, cement.	Cu. M.	0.0	
	Ci.	0.00	+/- 25
c. Irradiated Hardware.	Cu. M.	0.0	
	Ci.	0.0	+/- 25

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

a.	Co-60	0	0
	Ni-63	0	0
	Cs-137	0	0
	Fe-55	0	0
b.	Co-60	0	0
	Fe-55	0	0
	Ni-63	0	0
	Cs-137	0	0
	Ce-144	0	0
	Pu-241	0	0
c.	Co-60	0	0
	Fe-55	0	0
	Ni-63	0	0

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	Trucking over highway	Duratek, Oakridge, TN
0	Trucking over highway	Envirocare of Utah Clive, Utah
0	Rail	Envirocare of Utah

Table 3 (Cont.)

B. Irradiated Fuel Shipments (Disposition): None Shipped.

Additional ODCM Appendix C requirements.

<u>Solid Waste Class</u>	<u>Volume (Cu. M.)</u>	<u>Est. Activity (Ci)</u>	<u>Est. Total Error</u>
A	0.00E+00	0.00E+00	+/- 25%
B	0.00E+00	0.00E+00	+/- 25%
C	0.00E+00	0.00E+00	+/- 25%

<u>Container</u>	<u>Type</u>	<u>Package Volume (Cu. M.)</u>
Gondola Car	Strong Tight Container	68.0
B-25 Steel Box	Strong Tight Container	2.9

TABLE 3
Maine Yankee Atomic Power Station
Effluent and Waste Disposal Semiannual Report
Second Half, 2006
Solid Waste and Irradiated Fuel Shipments

A. Solid Waste Shipped Off-Site for Burial or Disposal (Not Irradiated Fuel).

1. Type of Waste.	Unit	6-Month Period	Est. Total Error, %
b Dry compressible waste, contaminated equipment, DAW, cement.	Cu. M. Ci	0 0	+/- 25

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

b.	Co-60	0.00	0.00
	Ni-63	0.00	0.00
	Cs-137	0.00	0.00

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	Rail	Envirocare of Utah Clive, Utah

TABLE 3
(Continued)

B. Irradiated Fuel Shipments (Disposition):

None Shipped.

Additional ODCM Appendix C requirements.

<u>Solid Waste Class</u>	<u>Volume (Cu. M.)</u>	<u>Est. Activity (Ci)</u>	<u>Est. Total Error</u>
A	0.00E+00	0.00E+00	+/- 25%
B	0.00E+00	0.00E+00	+/- 25%
C	0.00E+00	0.00E+00	+/- 25%

<u>Container</u>	<u>Type</u>	<u>Package Volume (Cu. M.)</u>
Gondola Car	Strong Tight Container	68.0

TABLE 4

Supplemental Information

1. Regulatory Limits

Effluent Concentrations

- a. Fission and activation gases 10 CFR 20; Appendix B, Table 2, Column 1
- b. Iodines 10 CFR 20; Appendix B, Table 2, Column 1
- c. Particulates, (with half lives greater than 8 days) 10 CFR 20; Appendix B, Table 2, Column 1
- d. Liquid effluents: 10 CFR 20; Appendix B, Table 2, Column 2

e. Total noble gas concentration: 2.0 E-4 uCi/ml

2. Average Energy- Not Applicable

3. Measurements and Approximations of Radioactivity

a. Fission and Activation Gases

There are no gaseous effluent release paths associated with ISFSI Operations.

b. Iodines

There are no gaseous effluent release paths associated with ISFSI Operations

c. Particulates

There are no particulate release paths associated with ISFSI Operations

d. Liquid Effluents

Continuous Discharges

There are no liquid effluent release paths associated with ISFSI Operations.

4. Batch Releases

a. Liquids

- 1. Number of Batch release: N/A
Number of Continuous Release: N/A
- 2. Total time period for batch releases: N/A
Total time period for continuous release: N/A
- 3. Maximum time period for a batch release: N/A
- 4. Average time period for batch releases: N/A
- 5. Minimum time period for a batch release: N/A
- 6. Average stream flow during periods of release of effluents into a flowing stream:
N/A
- 7. Maximum gross release concentration (uCi/ml): N/A

b. Gaseous

- 1. Number of batch release: N/A
- 2. Total time period for batch releases: Not Applicable
- 3. Maximum time period for a batch release: Not Applicable
- 4. Average time period for batch releases: Not Applicable
- 5. Minimum time period for a batch release: Not Applicable
- 6. Maximum gross release rate (uCi/sec): Not Applicable

5. Unplanned Releases -N/A

APPENDIX A

Radioactive Effluent Monitoring Instrumentation

There are no gaseous or liquid effluent release pathways associated with ISFSI Operations. Therefore, effluent monitoring instrumentation is not required.

APPENDIX B

Liquid Radwaste Treatment System

There are no liquid release pathways associated with ISFSI Operations. Therefore, a radwaste treatment system is not required.

APPENDIX C

Gaseous Radwaste Treatment System

There are no gaseous effluent release pathways associated with ISFSI Operations. Therefore, a gaseous waste treatment system is not required.

APPENDIX D

Lower Limit of Detection for Radiological Analysis

There are no liquid or gaseous sampling requirements associated with ISFSI Operations since effluent release pathways do not exist.

APPENDIX E

Summary of Off-site Dose Calculation Manual Revisions

There were no changes to the Offsite Dose Calculation in 2006.