

**MAINE YANKEE  
INDEPENDENT SPENT FUEL STORAGE INSTALLATION  
License No. DPR-36**

**ANNUAL RADIOACTIVE EFFLUENT  
RELEASE REPORT**

**January - December 2008**



**March 2009**  
Prepared by:

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## **EXECUTIVE SUMMARY**

Tables 1 and 2 summarize the quantity of radioactive gaseous and liquid effluents, respectively, for each quarter of 2008. There were no gaseous or liquid releases in 2008. Table 3 summarizes waste shipped off-site for disposal for each half year of 2008. There was no waste shipped in 2008.

Appendices A and B indicate the status of reportable items per the requirements of the Off-site Dose Calculation Manual (ODCM). There were no reportable items in 2008.

**Table 1A**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
First and Second Quarters, 2008  
Gaseous Effluents-Summation of All Releases

Nuclides Released	Unit	1st Quarter	2nd Quarter	Est. Total Error, %
<b>A. Fission and Activation Gases</b>				
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>B. Iodines</b>				
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*	
<b>C. Particulates</b>				
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*	
<b>D. Tritium</b>				
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/A\*= Not Applicable

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

**Table 1A**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
Third and Fourth Quarters, 2008  
Gaseous Effluents-Summation of All Releases

Nuclides Released	Unit	3rd Quarter	4th Quarter	Est. Total Error, %
<b>A. Fission and Activation Gases</b>				
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>B. Iodines</b>				
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*	
<b>C. Particulates</b>				
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*	
<b>D. Tritium</b>				
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/A\*= Not Applicable

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

**Table 1B**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
First and Second Quarters, 2008  
Gaseous Effluents-Elevated Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
<b>1. Fission Gases</b>					
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*
<b>2. Iodines</b>					
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*
<b>3. Particulates</b>					
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/A\*= Not Applicable

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

**Table 1B**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
Third and Fourth Quarters, 2008  
Gaseous Effluents-Elevated Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		3rd Quarter	4th Quarter	3rd Quarter	4th Quarter
<b>1. Fission Gases</b>					
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*
<b>2. Iodines</b>					
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*
<b>3. Particulates</b>					
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/A\*= Not Applicable

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

**Table 1C**

MAINE YANKEE ISFSI  
 Effluent and Waste Disposal Annual Report  
 First and Second Quarters, 2008  
 Gaseous Effluents-Ground Level Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
<b>1. Fission Gases</b>					
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*
<b>2. Iodines</b>					
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*
<b>3. Particulates</b>					
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/A\*= Not Applicable

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

**Table 1C**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
Third and Fourth Quarters, 2008  
Gaseous Effluents-Ground Level Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		3rd Quarter	4th Quarter	3rd Quarter	4th Quarter
<b>1. Fission Gases</b>					
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*
<b>2. Iodines</b>					
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*
<b>3. Particulates</b>					
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/A\*= Not Applicable

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

**Table 2A**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
First and Second Quarters, 2008  
Liquid Effluents-Summation of All Releases

<b>Nuclides Released</b>	<b>Unit</b>	<b>1st Quarter</b>	<b>2nd Quarter</b>	<b>Est. Total Error, %</b>
<b>A. Fission and Activation Products</b>				
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>B. Tritium</b>				
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*	
<b>C. Dissolved and Entrained Gases</b>				
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*	
<b>D. Gross Alpha Radioactivity</b>				
1. Total release	Ci	N/A*	N/A*	N/A*
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A*	
<b>E. Volume of Waste Released (prior to dilution)</b>				
	Liters	N/A*	N/A*	
<b>F. Volume of Dilution Water Used During Period</b>				
	Liters	N/A*	N/A*	

N/A\*= Not Applicable

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

**Table 2A**

MAINE YANKEE ISFSI  
 Effluent and Waste Disposal Annual Report  
 Third and Fourth Quarters, 2008  
 Liquid Effluents-Summation of All Releases

<b>Nuclides Released</b>	<b>Unit</b>	<b>3rd Quarter</b>	<b>4th Quarter</b>	<b>Est. Total Error, %</b>
<b>A. Fission and Activation Products</b>				
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>B. Tritium</b>				
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*	
<b>C. Dissolved and Entrained Gases</b>				
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*	
<b>D. Gross Alpha Radioactivity</b>				
1. Total release	Ci	N/A*	N/A*	N/A*
2. Average diluted concentration during period	.uCi/ml	N/A*	N/A*	
<b>E. Volume of Waste Released (prior to dilution)</b>	Liters	N/A*	N/A*	
<b>F. Volume of Dilution Water Used During Period</b>	Liters	N/A*	N/A*	

N/A\*= Not Applicable

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

**Table 2B**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
First and Second Quarters, 2008  
Liquid Effluents

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		1st Quarter	2nd Quarter	1st Quarter	2nd 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/A\*= Not Applicable

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

**Table 2B**

MAINE YANKEE ISFSI  
Effluent and Waste Disposal Annual Report  
Third and Fourth Quarters, 2008  
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/A\*= Not Applicable

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

**Table 3**  
**MAINE YANKEE ISFSI**  
Effluent and Waste Disposal Semiannual Report  
First Half, 2008  
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, evaporator bottoms, etc.	m <sup>3</sup> Ci	0.0 0.0	
b. Dry compressible waste, contaminated equipment, etc.	m <sup>3</sup> Ci	0.0 0.0	
c. Irradiated components, control rods, etc.	m <sup>3</sup> Ci	0.0 0.0	
2. Estimate of major nuclide composition (by type of waste)			
a. No Shipments	%	0	
b. No Shipments	%	0	
c. No Shipments	%	0	

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
None		

B. Irradiated Fuel Shipments (Disposition)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
None		

**Table 3**  
**MAINE YANKEE ISFSI**  
**Effluent and Waste Disposal Semiannual Report**  
**Second Half, 2008**  
**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, evaporator bottoms, etc.	m <sup>3</sup>	0.0	
	Ci	0.0	
b. Dry compressible waste, contaminated equipment, etc.	m <sup>3</sup>	0.0	
	Ci	0.0	
c. Irradiated components, control rods, etc.	m <sup>3</sup>	0.0	
	Ci	0.0	
2. Estimate of major nuclide composition (by type of waste)			
a. No Shipments	%	0	
b. No Shipments	%	0	
c. No Shipments	%	0	

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
None		

B. Irradiated Fuel Shipments (Disposition)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
None		

## **Appendix A**

### **Radiation Dose Assessment**

There were no gaseous or liquid effluent releases in 2008. Therefore, an assessment of radiation doses to the most likely exposed member(s) of the public to show compliance with 40CFR190 from effluents was not required.

**Appendix B**  
**Unplanned Releases**

There were no unplanned releases of radioactive materials from the site in 2008.