

NORTHEAST NUCLEAR ENERGY COMPANY

**MILLSTONE NUCLEAR POWER STATION
UNITS 1, 2 & 3**

RADIOACTIVE EFFLUENTS RELEASE REPORT

JULY - DECEMBER 1992

OPERATING LICENSES DPR-21, DPR-65, & NPF-49

DOCKETS 50-245, 50-336, & 50-423

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Table of Contents

- 1.0 Introduction**
- 2.0 Radioactive Effluent Releases**
- 3.0 Radioactive Solid Waste**
- 4.0 Measurement of Radioactivity**
- 5.0 REMM/ODCM/PCP Changes**
- 6.0 Effluent Monitor Inoperability**

1.0 Introduction

This report is being submitted for Northeast Nuclear Energy Company's Millstone Power Station Units 1, 2, and 3, in accordance with 10CFR50.36a and the Radiological Effluent Technical Specifications and in the U.S. NRC Regulatory Guide 1.21 format. A combined report is being submitted for all three units because they share some common effluent facilities.

The dose consequences of the radioactive effluents considered in this report will be addressed in the Radioactive Effluents Dose Report. However, based upon previous experience, the dose consequences are anticipated to be well within regulatory limits.

Listed below are the unit capacity factors and major shutdowns for the report period July 1 - December 31, 1992:

<u>Unit</u>	<u>Capacity Factor</u>	<u>Shutdowns</u>	
1	73.7%	07/04 - 08/15	Service Water Repairs
2	0.0%	07/01 - 12/31	Refueling/Steam Generator Replacement
3	69.6%	09/30 - 11/05	Ventilation System Repairs

Quadrex to CNSI for Burial

Nuclide	% of Total
H-3	8.95%
C-14	<0.01%
Cr-51	<0.01%
Mn-54	1.14%
Fe-55	57.59%
Co-58	<0.01%
Co-60	13.72%
Ni-63	4.66%
Zn-65	<0.01%
Nb-95	<0.01%
Zr-95	<0.01%
Cs-134	4.03%
Cs-137	7.70%
Pu-241	<0.01%

Quadrex to US Ecology for Burial

Nuclide	% of Total
H-3	8.98%
C-14	<0.01%
Cr-51	0.55%
Mn-54	1.15%
Fe-55	57.30%
Co-58	0.99%
Co-60	13.75%
Ni-63	4.64%
Zn-65	0.75%
Nb-95	0.05%
Zr-95	0.03%
Cs-134	4.03%
Cs-137	7.73%
Pu-241	0.09%

c) Irradiated Components, Control Rods, Etc.

Millstone to CNSI for Burial

Nuclide	% of Total
None	N/A

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck (Sole Use Vehicle)	Chem-Nuclear Services, Inc. Barnwell, SC
1	Truck (Sole Use Vehicle)	Scientific Ecology Group Oak Ridge, TN
2	Truck (Sole Use Vehicle)	Quadrex Oak Ridge, TN

4.0 Measurements of Radioactivity

4.1 Gaseous Releases

a. Unit 1 Stack

(1) Fission and Activation Gases

Stack monitors continuously record the effluent activity and flow rate. During periods when the augmented off-gas system is not operable, the radiation monitor reading is related to μCi by off-gas sampling at the steam air ejectors and subsequent isotopic analysis. The isotopic activity at the SJAЕ is mathematically decayed to establish the activity in the stack using the known holdup time. During periods of augmented off-gas system operation, samples are taken directly from the stack with a subsequent isotopic analysis. In both cases, the calculated activity in the stack is then correlated to the monitor reading. The isotopic concentrations at the release point are multiplied by the total stack flow to obtain total μCi release for each isotope.

(2) Iodines and Particulates

Charcoal cartridges and particulate filters are used to collect iodines and particulates, respectively. The filters are then analyzed for isotopic content using a gamma spectrometer;

particulate filters are also analyzed for strontium. Isotopic concentrations are multiplied by the release flow rate to determine the total amount of activity released.

b. Unit 2 Vent

Total effluent volume from the Unit 2 Vent per month is multiplied by the isotopic concentrations as measured by gamma spectrometer Ge(Li) analysis of grab samples of gases, iodine and particulates to obtain total μCi released from the Vent.

c. Unit 2 Containment Purges

Grab samples are taken for gaseous, particulate, and iodine. These are analyzed on Ge(Li) gamma spectrometer and concentrations computed. Computed concentrations are then multiplied by the purge volume for total μCi released.

Tritium collection is accomplished by the gas washing bottle method. The sample is counted on a liquid scintillation counter. Concentration is computed using worst possible case, 100% humidity. Concentration is multiplied by volume purged to give total μCi released.

d. Unit 2 Steam Generator Blowdown Tank Vent

A decontamination factor (DF) across the steam generator blowdown tank vent has been determined for iodines by

comparison of the results of gamma spectrometry, Ge(Li), analysis of steam generator blowdown water and grab samples of condensed steam exiting the blowdown tank vent. This DF was then applied to the total iodine releases via the steam generator blowdown water to determine the iodine releases out of the blowdown tank vent. An additional factor of 0.33 was utilized to account for the fraction of blowdown volume actually flashing to steam in the blowdown tank.

e. Unit 3 Vent and ESF Building Vent

The Unit 3 Ventilation Vent collects gas streams from the Auxiliary, Fuel, Waste Disposal, and Service Building exhausts, containment purge and gaseous waste process vent. The Unit 3 Vent is located on the roof of the turbine building and discharges 133 feet above grade. The Unit 3 ESF Building Vent collects gas streams from the Engineered Safety Features Building Ventilation System. This vent is located on the south wall and discharges 23 feet above grade. Total Effluent Volume per month is multiplied by isotopic concentrations from the analysis of grab samples to obtain the total activity released. These grab samples are obtained monthly for fission gas and tritium, weekly filters for iodines and particulates, monthly composites of particulate filters for gross alpha and strontium.

f. Unit 3 Containment Drawdown and Purge

Unit 3 Containment is drawn down and purged intermittently. The drawdown is accomplished by using the containment vacuum steam jet ejector and releases through an unmonitored vent on the roof of the Auxiliary Building. The containment vacuum pump discharge, which maintains subatmospheric pressure following the initial drawdown, is released through the Unit 1 Stack. The purge is the process of discharging air from containment to maintain temperature humidity, pressure, concentration, etc., where air is replaced. Purges are filtered and normally released through the Unit 3 Vent but may use the Unit 1 Stack. Purges and Drawdowns are intermittent and are therefore considered batch releases. Calculated volume discharged is multiplied by isotopic concentrations from the analysis of grab samples to obtain activity released.

4.2 Liquid Effluents

a. Liquid Tanks

There are numerous tanks which are used to discharge liquids containing radioactivity to the environs; they are:

Unit 1 - Decontamination Solution Tank
 Unit 1 - Floor Drain Sample Tanks (2)
 Unit 1 - Waste Sample Tanks (2)
 Unit 2 - Clean Waste Monitor Tanks (2)
 Unit 2 - Aerated Waste Monitor Tank
 Unit 3 - High Level Waste Test Tanks (2)
 Unit 3 - Low Level Waste Tanks (2)

Prior to release, a tank is recirculated for two equivalent tank volumes, a sample is drawn and analyzed on the Ge(Li) gamma spectrometer for individual radionuclide composition. An aliquot of the sample is composited and analyzed for H-3, Fe-55, Sr-89/90. Isotopic concentrations are multiplied by the volume released to obtain the total activity released. A proportional aliquot of each discharge is retained for composite analysis for strontium and gross alpha.

b. Unit 2 and Unit 3 Steam Generator Blowdown

Grab samples are taken to steam generator blowdown water, and are analyzed by gamma spectrometry, Ge(Li). Total volume of blowdown is multiplied by the isotopic concentrations to determine the total activity released via blowdown. The calculated activity released out of the blowdown tank vent is accounted for pending the point of blowdown sampling.

Tritium is determined through liquid scintillation counting and strontiums are analyzed by radiochemical separations and appropriate counting techniques.

4.3 Estimate of Errors

Estimates of errors associated with radioactivity measurements were made using the following guidelines:

Sampling/Data Collection	10%	Variation in data collection
Calibration	5%	Calibration to NBS standards
Sample Counting	10%	Maximum error for counting statistics
Flow & Level Measurements	10%	Maximum error for release volumes

2.0 Radioactive Effluent Releases

The plants were operated in accordance with the Technical Specifications. The liquid and airborne effluents are given in the attached tables as follows:

Table 2.1-1	Unit 1 Liquid Effluents - Summary
Table 2.1-2	Unit 1 Liquid Effluents - Batch
Table 2.1-3	Unit 1 Airborne Effluents - Summary
Table 2.1-4	Unit 1 Airborne Effluents - Elevated Continuous
Table 2.2-1	Unit 2 Liquid Effluents - Summary
Table 2.2-2	Unit 2 Liquid Effluents - Continuous - SGBD
Table 2.2-3	Unit 2 Liquid Effluents - Batch
Table 2.2-4	Unit 2 Airborne Effluents Summary
Table 2.2-5	Unit 2 Airborne Effluents - Mixed Continuous - Vent and SGBD Tank Vent
Table 2.2-6	Unit 2 Airborne Effluents - Mixed Batch - Containment Purges
Table 2.2-7	Unit 2 Airborne Effluents - Elevated Batch - WGD
Table 2.3-1	Unit 3 Liquid Effluents - Summary
Table 2.3-2	Unit 3 Liquid Effluents - Continuous - SGBD
Table 2.3-3	Unit 3 Liquid Effluents - Batch - LWS
Table 2.3-4	Unit 3 Liquid Effluents - Batch - CPF WN Sumps
Table 2.3-5	Unit 3 Airborne Effluents - Summary
Table 2.3-6	Unit 3 Airborne Effluents - Mixed Continuous - Normal Ventilation
Table 2.3-7	Unit 3 Airborne Effluents - Mixed Continuous - ESF Building Ventilation
Table 2.3-8	Unit 3 Airborne Effluents - Mixed Batch - Containment Drawdown
Table 2.3-9	Unit 3 Airborne Effluents - Mixed Batch - Containment Purges

Table 2.1-1
Millstone Unit No. 1
Liquid Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	2.12E-02	5.70E-02	3.17E-02	1.10E-01
2. Average Period Diluted Activity	uCi/ml	1.61E-09	1.32E-09	4.37E-10	8.52E-10

B. Tritium

1. Total Activity Released	Ci	6.89E-01	5.04E-01	4.96E-01	1.69E+00
2. Average Period Diluted Activity	uCi/ml	5.26E-08	1.16E-08	6.84E-09	1.31E-08

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci			1.63E-05	1.63E-05
2. Average Diluted Activity	uCi/ml			2.25E-13	1.26E-13

D. Gross Alpha

1. Total Activity Released	Ci	2.81E-05			2.81E-05
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E. Volume

1. Released Waste Volume	Liters	7.69E+05	8.54E+05	7.93E+05	2.42E+06
2. Dilution Volume During Releases	Liters	4.42E+08	1.95E+09	2.53E+09	4.92E+09
3. Dilution Volume During Period	Liters	1.31E+10	4.33E+10	7.26E+10	1.29E+11

Table 2.1-1
Millstone Unit No. 1
Liquid Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	1.76E-02	1.32E-02	2.69E-02	5.78E-02
2. Average Period Diluted Activity	uCi/ml	2.35E-10	1.84E-10	3.68E-10	2.63E-10

B. Tritium

1. Total Activity Released	Ci	7.79E-01	7.18E-01	8.38E-01	2.34E+00
2. Average Period Diluted Activity	uCi/ml	1.04E-08	1.00E-08	1.15E-08	1.06E-08

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci	2.04E-05	5.36E-06		2.58E-05
2. Average Diluted Activity	uCi/ml	2.72E-13	7.47E-14		1.17E-13

D. Gross Alpha

1. Total Activity Released	Ci	No Activity Detected			
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E. Volume

1. Released Waste Volume	Liters	7.02E+05	8.26E+05	1.02E+06	2.55E+06
2. Dilution Volume During Releases	Liters	2.41E+09	2.97E+09	3.42E+09	8.80E+09
3. Dilution Volume During Period	Liters	7.49E+10	7.18E+10	7.29E+10	2.20E+11

Table 2.1-2
Millstone Unit No. 1
Liquid Effluents - Batch

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Cr-51	Ci			5.35E-04	5.35E-04
Mn-54	Ci	3.23E-04	4.94E-04	5.95E-04	1.41E-03
Co-58	Ci	1.72E-05			1.72E-05
Fe-59	Ci				
Co-60	Ci	1.28E-02	4.37E-02	2.51E-02	8.16E-02
Zn-65	Ci	1.70E-03	2.60E-03	1.83E-03	6.13E-03
Y-93	Ci			1.06E-04	1.06E-04
Mo-99	Ci		1.09E-05		1.09E-05
Tc-99m	Ci		1.24E-05		1.24E-05
Ag-110m	Ci	4.82E-04	6.81E-05	7.65E-05	6.27E-04
I-131	Ci				
I-133	Ci			9.51E-06	9.51E-06
Cs-134	Ci				
Cs-137	Ci	5.24E-03	8.88E-03	2.94E-03	1.71E-02
Ba-139	Ci			2.65E-05	2.65E-05
Ba-140	Ci		8.84E-05		8.84E-05
La-142	Ci			3.31E-05	3.31E-05
	Ci				
	Ci				
Fe-55	Ci	5.65E-04	1.11E-03	4.76E-04	2.15E-03
Sr-89	Ci			2.28E-06	2.28E-06
Sr-90	Ci	3.81E-05	3.50E-05		7.31E-05
Total Activity	Ci	2.12E-02	5.70E-02	3.17E-02	1.10E-01

Xe-133	Ci			1.63E-05	1.63E-05
Xe-135	Ci				
Xe-135m	Ci				
	Ci				
	Ci				
	Ci				
Total Activity	Ci			1.63E-05	1.63E-05

Table 2.1-2
Millstone Unit No. 1
Liquid Effluents - Batch

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Cr-51	Ci	2.77E-04		2.00E-04	4.77E-04
Mn-54	Ci	2.14E-03	9.96E-04	7.73E-04	3.91E-03
Co-58	Ci	4.27E-05			4.27E-05
Fe-59	Ci	1.15E-04			1.15E-04
Co-60	Ci	1.25E-02	8.31E-03	1.89E-02	3.97E-02
Zn-65	Ci	9.43E-04	1.66E-03	3.05E-03	5.65E-03
Na-24	Ci			2.24E-05	2.24E-05
Mo-99	Ci	5.28E-06			5.28E-06
Tc-99m	Ci	5.67E-06			5.67E-06
Ag-110m	Ci	2.64E-05	1.04E-04	3.08E-05	1.61E-04
I-131	Ci			2.37E-05	2.37E-05
I-133	Ci		5.70E-06		5.70E-06
Cs-134	Ci				
Cs-137	Ci	7.41E-04	2.26E-04	2.22E-03	3.19E-03
Ba-139	Ci				
Ba-140	Ci				
La-142	Ci				
Nb-97	Ci	2.98E-05		2.85E-05	5.83E-05
Ce-143	Ci	3.28E-05			3.28E-05
Fe-55	Ci	7.72E-04	1.94E-03	1.53E-03	4.24E-03
Sr-89	Ci				
Sr-90	Ci	2.88E-06		9.95E-05	1.02E-04
Total Activity	Ci	1.76E-02	1.32E-02	2.69E-02	5.78E-02
Xe-133	Ci	2.04E-05			2.04E-05
Xe-135	Ci		5.36E-06		5.36E-06
Xe-135m	Ci				
	Ci				
	Ci				
	Ci				
Total Activity	Ci	2.04E-05	5.36E-06		2.58E-05

Table 2.1-3
Millstone Unit No. 1
Airborne Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci		No Activity Detected		
2. Average Period Release Rate	uCi/sec				

B. Iodines

1. Total I-131 Activity Released	Ci	1.40E-05		1.21E-05	2.61E-05
2. Average Period Release Rate	uCi/sec	4.64E-06		3.99E-06	3.09E-06

C. Particulates

1. Total Particulate Activity Released	Ci	6.82E-05	4.10E-05	3.17E-04	4.26E-04
2. Average Diluted Activity	uCi/sec	2.26E-05	1.70E-05	1.05E-04	5.04E-05
3. Total Gross Alpha Activity Released	Ci	5.37E-07	3.93E-07	4.57E-07	1.39E-06

D. Tritium

1. Total Activity Released	Ci		No Activity Detected		
2. Average Period Release Rate	uCi/sec				

Table 2.1-3
Millstone Unit No. 1
Airborne Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci			3.00E-01	3.00E-01
2. Average Period Release Rate	uCi/sec			9.93E-02	3.82E-02

B. Iodines

1. Total I-131 Activity Released	Ci	2.97E-05	1.97E-05	4.05E-05	8.99E-05
2. Average Period Release Rate	uCi/sec	1.23E-05	8.14E-06	1.34E-05	1.14E-05

C. Particulates

1. Total Particulate Activity Released	Ci	2.78E-04	2.08E-05	1.29E-04	4.28E-04
2. Average Diluted Activity	uCi/sec	1.15E-04	8.59E-06	4.28E-05	5.44E-05
3. Total Gross Activity Activity Released	Ci	2.32E-07	2.81E-07	2.32E-07	7.45E-07

D. Tritium

1. Total Activity Released	Ci		5.39E+00	1.41E+01	1.95E+01
2. Average Period Release Rate	uCi/sec		2.23E+00	4.67E+00	2.48E+00

Table 2.1-4
Millstone Unit No. 1
Airborne Effluents - Elevated Continuous

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Xe-138	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-85m	Ci				
Xe-135	Ci				
Xe-133	Ci				
Xe-135m	Ci				
Xe-133m	Ci				
Xe-131m	Ci				
Kr-85	Ci				
Ar-41	Ci				
	Ci				
Total Activity	Ci				

I-131	Ci	1.40E-05		1.21E-05	2.61E-05
I-133	Ci			4.75E-05	4.75E-05

Cr-51	Ci	2.57E-05		1.58E-04	1.84E-04
Mn-54	Ci			1.91E-05	1.91E-05
Fe-59	Ci				
Co-58	Ci			1.04E-05	1.04E-05
Co-60	Ci	3.16E-05	2.11E-05	4.65E-05	9.92E-05
Zn-65	Ci	2.31E-06	9.13E-06	7.04E-05	8.18E-05
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci	6.47E-06	8.11E-06	1.05E-05	2.51E-05
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Co-57	Ci	3.15E-07			3.15E-07
	Ci				
Sr-89	Ci	1.84E-06	2.52E-06	2.28E-06	6.64E-06
Sr-90	Ci		1.14E-07		1.14E-07
Total Activity	Ci	6.82E-05	4.10E-05	3.17E-04	4.26E-04

Table 2.1-4
Millstone Unit No. 1
Airborne Effluents - Elevated Continuous

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Xe-138	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-85m	Ci				
Xe-135	Ci			3.00E-01	3.00E-01
Xe-133	Ci				
Xe-135m	Ci				
Xe-133m	Ci				
Xe-131m	Ci				
Kr-85	Ci				
Ar-41	Ci				
	Ci				
Total Activity	Ci			3.00E-01	3.00E-01
I-131	Ci	2.97E-05	1.97E-05	4.05E-05	8.99E-05
I-133	Ci	2.40E-04	1.12E-04	3.13E-04	6.65E-04
Cr-51	Ci	1.18E-04		5.39E-05	1.72E-04
Mn-54	Ci	4.53E-06		1.71E-06	6.24E-06
Fe-59	Ci				
Co-58	Ci	5.19E-06			5.19E-06
Co-60	Ci	2.00E-05	1.25E-05	1.28E-05	4.53E-05
Zn-65	Ci	1.19E-04		5.47E-05	1.74E-04
I-131	Ci	3.33E-06	2.23E-06		5.56E-06
Cs-134	Ci				
Cs-137	Ci		4.32E-06	5.32E-06	9.64E-06
Ba-140	Ci	5.08E-06			5.08E-06
Ce-141	Ci				
Ce-144	Ci				
Co-57	Ci				
	Ci				
Sr-89	Ci	2.53E-06	1.73E-06	7.75E-07	5.04E-06
Sr-90	Ci				
Total Activity	Ci	2.78E-04	2.08E-05	1.29E-04	4.28E-04

Table 2.2-1
Millstone Unit No. 2
Liquid Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	3.24E-01	7.94E-02	1.27E-01	5.31E-01
2. Average Period Diluted Activity	uCi/ml	6.71E-09	1.61E-09	2.72E-09	3.68E-09

B. Tritium

1. Total Activity Released	Ci	5.46E+00	1.88E-01	3.59E-01	6.01E+00
2. Average Period Diluted Activity	uCi/ml	1.13E-07	3.82E-09	7.67E-09	4.16E-08

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci	8.07E-02			8.07E-02
2. Average Diluted Activity	uCi/ml	1.67E-09			5.59E-10

D. Gross Alpha

1. Total Activity Released	Ci			8.96E-06	8.96E-06
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E. Volume

1. Released Waste Volume	Liters	1.16E+06	8.20E+05	4.60E+05	2.44E+06
2. Dilution Volume During Releases	Liters	4.08E+09	2.18E+09	1.52E+09	7.77E+09
3. Dilution Volume During Period	Liters	4.84E+10	4.92E+10	4.68E+10	1.44E+11

Table 2.2-1
Millstone Unit No. 2
Liquid Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	4.86E-03	3.81E-01	2.40E-01	6.26E-01
2. Average Period Diluted Activity	uCi/ml	1.00E-10	8.13E-09	4.91E-09	4.34E-09

B. Tritium

1. Total Activity Released	Ci	1.29E-01	7.54E-01	2.92E-01	1.17E+00
2. Average Period Diluted Activity	uCi/ml	2.66E-09	1.61E-08	5.96E-09	8.14E-09

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci	7.72E-05		2.02E-06	7.93E-05
2. Average Diluted Activity	uCi/ml	1.60E-12		4.13E-14	5.50E-13

D. Gross Alpha

1. Total Activity Released	Ci	No Activity Detected			
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E. Volume

1. Released Waste Volume	Liters	1.05E+06	5.68E+05	1.11E+06	2.72E+06
2. Dilution Volume During Releases	Liters	3.50E+09	2.09E+09	4.65E+09	1.02E+10
3. Dilution Volume During Period	Liters	4.84E+10	4.68E+10	4.90E+10	1.44E+11

Table 2.2-2
 Millstone Unit No. 2
 Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Sr-89	Ci				
Sr-90	Ci				
Fe-55	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85	Ci				
Xe-133	Ci				
Total Activity	Ci				

Table 2.2-2
 Millstone Unit No. 2
 Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Sr-89	Ci				
Sr-90	Ci				
Fe-55	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85	Ci				
Xe-133	Ci				
Total Activity	Ci				

Table 2.2-3
Millstone Unit No. 2
Liquid Effluents - Batch

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Co-58	Ci	7.99E-02	5.23E-02	5.95E-02	1.92E-01
Co-60	Ci	5.79E-02	1.73E-02	2.36E-02	9.87E-02
Ag-110m	Ci	1.70E-03	3.29E-04		2.03E-03
Sb-124	Ci	1.39E-02	3.40E-04	2.75E-04	1.45E-02
I-131	Ci	1.84E-03			1.84E-03
Cs-137	Ci	2.55E-02	4.16E-03	2.80E-02	5.76E-02
Cs-134	Ci	7.78E-03	1.69E-03	8.68E-03	1.82E-02
Sb-125	Ci	2.97E-02	2.40E-04	1.97E-03	3.19E-02
Mn-54	Ci	1.68E-03	5.48E-04	6.45E-04	2.87E-03
Cr-51	Ci	7.86E-02	1.02E-03	5.44E-04	8.01E-02
Nb-95	Ci	6.86E-03	7.68E-05	1.93E-04	7.13E-03
Zr-95	Ci	4.42E-03			4.42E-03
Ru-105	Ci	4.78E-03			4.78E-03
Ru-103	Ci	1.13E-04			1.13E-04
Ce-141	Ci	1.50E-05			1.50E-05
Ce-144	Ci	1.07E-04			1.07E-04
Na-24	Ci	2.31E-04			2.31E-04
Fe-59	Ci	8.46E-04			8.46E-04
Co-57	Ci	1.69E-04	8.09E-05	1.42E-04	3.92E-04
Sr-92	Ci	1.20E-05	1.05E-06		1.30E-05
La-140	Ci	1.57E-04			1.57E-04
La-141	Ci	2.29E-04			2.29E-04
Cs-138	Ci	5.27E-05			5.27E-05
Nb-97	Ci		5.77E-05		5.77E-05
Sr-89	Ci	3.07E-05	1.48E-05	7.78E-05	1.23E-04
Sr-90	Ci	4.60E-05	2.24E-05	1.01E-04	1.69E-04
Fe-55	Ci	7.93E-03	1.30E-03	3.55E-03	1.28E-02
Total Activity	Ci	3.24E-01	7.94E-02	1.27E-01	5.31E-01
Gross Alpha	Ci			8.96E-06	8.96E-06
H-3	Ci	5.46E+00	1.88E-01	3.59E-01	6.01E+00
Kr-85	Ci	7.05E-02			7.05E-02
Xe-133	Ci	1.02E-02			1.02E-02
Total Activity	Ci	8.07E-02			8.07E-02

Table 2.2-3
Millstone Unit No. 2
Liquid Effluents - Batch

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Co-58	Ci	2.58E-04	6.20E-02	2.44E-02	8.66E-02
Co-60	Ci	3.69E-04	1.44E-01	1.06E-01	2.50E-01
Ag-110m	Ci	8.41E-06	1.11E-02	5.41E-03	1.65E-02
Sb-125	Ci	1.76E-04	7.64E-03	1.25E-02	2.03E-02
Cs-134	Ci	3.12E-05	2.69E-02	1.39E-02	4.09E-02
Cs-137	Ci	1.28E-04	8.73E-02	6.04E-02	1.48E-01
Nb-97	Ci	3.62E-06	8.18E-06	8.02E-04	8.14E-04
La-142	Ci	2.68E-05			2.68E-05
Mn-54	Ci		3.09E-03	1.99E-03	5.08E-03
Cr-51	Ci		2.23E-04		2.23E-04
Sr-92	Ci		7.05E-06	3.52E-04	3.59E-04
Nb-95	Ci		2.86E-03	2.94E-03	5.80E-03
Zr-95	Ci		1.25E-03	1.18E-03	2.43E-03
Ru-105	Ci		1.08E-03	1.05E-03	2.12E-03
Sb-124	Ci		1.40E-03	1.48E-03	2.88E-03
Co-57	Ci		2.71E-05	1.77E-05	4.47E-05
Ru-103	Ci		5.83E-04		5.83E-04
Ru-106	Ci		1.09E-02		1.09E-02
Ba-142	Ci			1.30E-04	1.30E-04
Sr-89	Ci		8.25E-05		8.25E-05
Sr-90	Ci		8.76E-05	3.04E-05	1.18E-04
Fe-55	Ci	3.86E-03	2.04E-02	7.93E-03	3.22E-02
Total Activity	Ci	4.86E-03	3.81E-01	2.40E-01	6.26E-01
Gross Alpha	Ci				
H-3	Ci	1.29E-01	7.54E-01	2.92E-01	1.17E+00
Ar-41	Ci			2.02E-06	2.02E-06
Xe-133m	Ci	9.89E-06			9.89E-06
Xe-138	Ci	6.74E-05			6.74E-05
Total Activity	Ci	7.72E-05		2.02E-06	7.93E-05

Table 2.2-4
Millstone Unit No. 2
Airborne Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci	4.76E-01			4.76E-01
2. Average Period Release Rate	uCi/sec	1.97E-01			6.06E-02

B. Iodines

1. Total I-131 Activity Released	Ci	4.78E-04	1.10E-04	1.49E-06	5.89E-04
2. Average Period Release Rate	uCi/sec	1.98E-04	4.55E-05	4.93E-07	7.50E-05

C. Particulates

1. Total Particulate Activity Released	Ci		No Activity Detected		
2. Average Diluted Activity	uCi/sec				
3. Total Gross Alpha Activity Released	Ci		No Activity Detected		

D. Tritium

1. Total Activity Released	Ci	1.53E+00	1.27E+00		2.80E+00
2. Average Period Release Rate	uCi/sec	6.33E-01	5.25E-01		3.56E-01

Table 2.2-4
Millstone Unit No. 2
Airborne Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci		No Activity Detected		
2. Average Period Release Rate	uCi/sec				

B. Iodines

1. Total I-131 Activity Released	Ci		No Activity Detected		
2. Average Period Release Rate	uCi/sec				

C. Particulates

1. Total Particulate Activity Released	Ci		No Activity Detected		
2. Average Diluted Activity	uCi/sec				
3. Total Gross Alpha Activity Released	Ci		No Activity Detected		

D. Tritium

1. Total Activity Released	Ci		No Activity Detected		
2. Average Period Release Rate	uCi/sec				

Table 2.2-5
Millstone Unit No. 2
Airborne Effluents - Mixed Continuous - Vent and SGBD Tank Vent

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Xe-133	Ci	4.08E-01			4.08E-01
Xe-135	Ci				
Xe-131m	Ci				
Xe-135m	Ci				
Kr-85	Ci				
Total Activity	Ci	4.08E-01			4.08E-01

2. Iodines

I-131	Ci	4.78E-04	1.10E-04	1.49E-06	5.89E-04
I-133	Ci	6.21E-06	7.21E-06	1.49E-06	1.49E-05

3. Particulates

Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Sr-89	Ci				
Sr-90	Ci				
Fe-55	Ci				
Total Activity	Ci				

H-3	Ci	1.53E+00	1.27E+00		2.80E+00
Gross Alpha	Ci				

Table 2.2-5
Millstone Unit No. 2
Airborne Effluents - Mixed Continuous - Vent and SGBD Tank Vent
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Xe-133	Ci				
Xe-135	Ci				
Xe-131m	Ci				
Xe-135m	Ci				
Kr-85	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Sr-89	Ci				
Sr-90	Ci				
Fe-55	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.2-6
Millstone Unit No. 2
Airborne Effluents - Mixed Batch - Containment Purges
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Xe-133	Ci				
Xe-135	Ci				
Xe-131m	Ci				
Xe-133m	Ci				
Kr-85	Ci				
Kr-85m	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Rb-88	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.2-6
Millstone Unit No. 2
Airborne Effluents - Mixed Batch - Containment Purges
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Xe-133	Ci				
Xe-135	Ci				
Xe-131m	Ci				
Xe-133m	Ci				
Kr-85	Ci				
Kr-85m	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Rb-88	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.2-7
 Millstone Unit No. 2
 Airborne Effluents - Elevated Batch - WGD

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Kr-85	Ci	5.32E-02			5.32E-02
Xe-131m	Ci	4.28E-03			4.28E-03
Xe-133	Ci	1.07E-02			1.07E-02
Total Activity	Ci	6.81E-02			6.81E-02

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Rb-88	Ci				
Total Activity	Ci				

H-3	Ci	1.96E-03			1.96E-03
Gross Alpha	Ci				

Table 2.2-7
Millstone Unit No. 2
Airborne Effluents - Elevated Batch - WGD
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Kr-85	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Rb-88	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.3-1
Millstone Unit No. 3
Liquid Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	2.10E-01	1.20E-01	2.24E-01	5.54E-01
2. Average Period Diluted Activity	uCi/ml	1.45E-09	7.55E-10	1.46E-09	1.21E-09

B. Tritium

1. Total Activity Released	Ci	2.70E+01	1.91E+01	7.21E+01	1.18E+02
2. Average Period Diluted Activity	uCi/ml	1.86E-07	1.21E-07	4.69E-07	2.59E-07

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci	2.25E-03	3.79E-03	5.08E-03	1.11E-02
2. Average Diluted Activity	uCi/ml	1.55E-11	2.39E-11	3.30E-11	2.43E-11

D. Gross Alpha

1. Total Activity Released	Ci	No Activity Detected			
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E. Volume

1. Released Waste Volume	Liters	1.43E+06	1.56E+06	1.51E+06	4.50E+06
2. Dilution Volume During Releases	Liters	8.18E+09	9.20E+09	9.54E+09	2.69E+10
3. Dilution Volume During Period	Liters	1.45E+11	1.58E+11	1.54E+11	4.57E+11

Table 2.3-1
Millstone Unit No. 3
Liquid Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Products

1. Total Activity Released	Ci	2.87E-01	5.14E-02	4.00E-02	3.78E-01
2. Average Period Diluted Activity	uCi/ml	3.26E-09	3.67E-10	2.58E-10	9.87E-10

B. Tritium

1. Total Activity Released	Ci	2.35E+01	5.00E+01	8.19E+01	1.55E+02
2. Average Period Diluted Activity	uCi/ml	2.67E-07	3.57E-07	5.28E-07	4.05E-07

C. Dissolved and Entrained Gases

1. Total Activity Released	Ci	3.89E-03	1.71E-03	1.65E-03	7.24E-03
2. Average Diluted Activity	uCi/ml	4.42E-11	1.22E-11	1.06E-11	1.89E-11

D. Gross Alpha

1. Total Activity Released	Ci	No Activity Detected			
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E. Volume

1. Released Waste Volume	Liters	8.13E+05	9.14E+05	1.03E+06	2.76E+06
2. Dilution Volume During Releases	Liters	3.67E+09	4.44E+09	5.66E+09	1.38E+10
3. Dilution Volume During Period	Liters	8.80E+10	1.40E+11	1.55E+11	3.83E+11

Table 2.3-2
Millstone Unit No. 3
Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Cr-51	Ci				
Mn-54	Ci				
Co-57	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				
Na-24	Ci				
Fe-59	Ci				
Ce-144	Ci				
Zn-65	Ci				
Tc-99m	Ci				
Ba-142	Ci				
La-140	Ci				
Ag-110m	Ci				
Hf-181	Ci				
Sb-122	Ci				
Sb-124	Ci				
Sb-125	Ci				
Sb-126	Ci				
Cs-134	Ci				
Cs-137	Ci				
Cs-138	Ci				
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci				
Ru-106	Ci				
Nb-95	Ci				
Nb-97	Ci				
Fe-55	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				

Table 2.3-2
 Millstone Unit No. 3
 Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Xe-131m	Ci				
Xe-133	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
Total Activity	Ci				

Table 2.3-2
 Millstone Unit No. 3
 Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Cr-51	Ci				
Mn-54	Ci				
Co-57	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				
Na-24	Ci				
Fe-59	Ci				
Ce-144	Ci				
Zn-65	Ci				
Tc-99m	Ci				
Ba-142	Ci				
La-140	Ci				
Ag-110m	Ci				
Hf-181	Ci				
Sb-122	Ci				
Sb-124	Ci				
Sb-125	Ci				
Sb-126	Ci				
Cs-134	Ci				
Cs-137	Ci				
Cs-138	Ci				
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci				
Ru-106	Ci				
Nb-95	Ci				
Nb-97	Ci				
Fe-55	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				

Table 2.3-2
 Millstone Unit No. 3
 Liquid Effluents - Continuous - SGBD
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Xe-131m	Ci				
Xe-133	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
Total Activity	Ci				

Table 2.3-3
Millstone Unit No. 3
Liquid Effluents - Batch - LWS

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Cr-51	Ci		1.21E-03	8.74E-04	2.08E-03
Mn-54	Ci	1.05E-02	4.32E-03	6.43E-03	2.13E-02
Co-57	Ci	2.79E-04	4.99E-05	1.23E-04	4.52E-04
Co-58	Ci	8.49E-03	5.29E-03	6.59E-03	2.04E-02
Co-60	Ci	1.05E-01	2.55E-02	3.98E-02	1.70E-01
I-131	Ci			2.63E-04	2.63E-04
I-132	Ci				
I-133	Ci		4.70E-05	3.84E-04	4.31E-04
I-134	Ci				
I-135	Ci		2.50E-04		2.50E-04
Na-24	Ci	5.46E-05		2.92E-05	8.38E-05
Fe-59	Ci				
Ce-144	Ci				
Zn-65	Ci	4.77E-04	2.71E-04	4.63E-04	1.21E-03
Tc-99m	Ci				
Ba-142	Ci			2.66E-04	2.66E-04
La-140	Ci			3.87E-05	3.87E-05
Ag-110m	Ci	5.00E-03	2.71E-03	3.51E-03	1.12E-02
Hf-181	Ci				
Sb-122	Ci				
Sb-124	Ci	6.93E-03	8.34E-03	8.98E-03	2.43E-02
Sb-125	Ci	3.69E-02	5.19E-02	5.58E-02	1.45E-01
Sb-126	Ci				
Cs-134	Ci	8.14E-04	3.11E-03	2.77E-02	3.16E-02
Cs-137	Ci	2.25E-03	5.37E-03	4.27E-02	5.03E-02
Cs-138	Ci	1.80E-04		7.78E-05	2.58E-04
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci			4.76E-05	4.76E-05
Ru-106	Ci		1.35E-04		1.35E-04
Nb-95	Ci	1.03E-03	6.01E-04	3.15E-04	1.95E-03
Nb-97	Ci		1.20E-05	4.10E-04	4.22E-04
Sr-92	Ci	2.71E-05	5.55E-06	3.32E-05	6.59E-05
Ru-105	Ci	1.02E-03	1.75E-03	2.84E-04	3.05E-03
Tc-104	Ci	2.46E-06			2.46E-06
As-76	Ci		3.22E-06		3.22E-06
Y-91m	Ci		2.46E-06		2.46E-06
La-141	Ci		2.30E-03	7.38E-04	3.04E-03
Be-7	Ci		2.54E-04		2.54E-04
Tc-101	Ci			2.06E-04	2.06E-04
Zn-69m	Ci			5.60E-06	5.60E-06
Cu-64	Ci			4.86E-04	4.86E-04
Y-92	Ci			3.40E-05	3.40E-05

Table 2.3-3
Millstone Unit No. 3
Liquid Effluents - Batch - LWS

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Fe-55	Ci	3.15E-02	6.08E-03	2.72E-02	6.48E-02
Sr-89	Ci				
Sr-90	Ci			1.04E-04	1.04E-04
Total Activity	Ci	2.10E-01	1.20E-01	2.24E-01	5.54E-01
Gross Alpha	Ci				
H-3	Ci	2.70E+01	1.91E+01	7.21E+01	1.18E+02
Kr-85m	Ci	3.00E-06			3.00E-06
Kr-87	Ci		7.68E-06		7.68E-06
Kr-88	Ci		1.49E-05		1.49E-05
Xe-131m	Ci		4.49E-05		4.49E-05
Xe-133	Ci	6.71E-04	1.51E-03	2.63E-03	4.81E-03
Xe-135	Ci	9.65E-04	1.20E-03	2.43E-03	4.60E-03
Xe-135m	Ci			1.58E-05	1.58E-05
Xe-138	Ci	6.14E-04			6.14E-04
Kr-85	Ci		1.01E-03		1.01E-03
Total Activity	Ci	2.25E-03	3.79E-03	5.08E-03	1.11E-02

Table 2.3-3
Millstone Unit No. 3
Liquid Effluents - Batch - LWS

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Cr-51	Ci				
Mn-54	Ci	7.28E-03	3.73E-03	1.79E-03	1.28E-02
Co-57	Ci	1.62E-04	1.34E-04	6.79E-05	3.64E-04
Co-58	Ci	2.12E-01	8.33E-03	1.71E-02	2.37E-01
Co-60	Ci	7.17E-03	2.20E-02	9.88E-03	3.91E-02
I-131	Ci	2.23E-04		3.26E-05	2.56E-04
I-132	Ci				
I-133	Ci	4.00E-05		2.92E-05	6.92E-05
I-134	Ci				
I-135	Ci				
Na-24	Ci			6.78E-05	6.78E-05
Fe-59	Ci	1.63E-04			1.63E-04
Ce-144	Ci				
Zn-65	Ci		2.34E-04		2.34E-04
Tc-99m	Ci				
Mo-99	Ci			1.46E-06	1.46E-06
Zr-95	Ci				
Ag-110m	Ci	3.15E-04	7.73E-04	6.25E-04	1.71E-03
Hf-181	Ci				
Sb-122	Ci		1.23E-04	3.10E-04	4.33E-04
Sb-124	Ci	2.76E-03			2.76E-03
Sb-125	Ci	2.21E-02	3.68E-03	2.52E-03	2.83E-02
Sb-126	Ci				
Cs-134	Ci	1.10E-02	2.42E-03		1.34E-02
Cs-137	Ci	1.69E-02	3.67E-03	2.87E-03	2.34E-02
Cs-138	Ci			4.65E-03	4.65E-03
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci				
Ru-106	Ci		1.41E-04		1.41E-04
Nb-95	Ci		2.95E-04		2.95E-04
Nb-97	Ci			7.35E-05	7.35E-05
Ba-140	Ci	1.10E-03			1.10E-03
La-140	Ci	8.16E-04			8.16E-04
Ru-105	Ci	4.54E-04		8.41E-06	4.62E-04
Sr-92	Ci	9.70E-06			9.70E-06
Tc-104	Ci				
Be-7	Ci		1.35E-04		1.35E-04
As-76	Ci			8.62E-06	8.62E-06
Ru-103	Ci			2.96E-06	2.96E-06
Tc-101	Ci				
Sr-87m	Ci				
Fe-55	Ci	3.98E-03	5.76E-03		9.74E-03

Table 2.3-3
Millstone Unit No. 3
Liquid Effluents - Batch - LWS

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Sr-89	Ci	3.49E-04			3.49E-04
Sr-90	Ci				
Total Activity	Ci	2.87E-01	5.14E-02	4.00E-02	3.78E-01
Gross Alpha	Ci				
H-3	Ci	2.35E+01	5.00E+01	8.19E+01	1.55E+02
Kr-85m	Ci			1.06E-05	1.06E-05
Kr-87	Ci				
Xe-131m	Ci	3.59E-03	7.19E-05		3.66E-03
Xe-133m	Ci	1.37E-04			1.37E-04
Xe-133	Ci	1.54E-04	9.00E-04	1.08E-03	2.13E-03
Xe-135	Ci		6.96E-04	5.55E-04	1.25E-03
Xe-135m	Ci				
Xe-137	Ci		4.33E-05		4.33E-05
Ar-41	Ci	4.99E-06			4.99E-06
Total Activity	Ci	3.89E-03	1.71E-03	1.65E-03	7.24E-03

Table 2.3-4
 Millstone Unit No. 3
 Liquid Effluents - Batch - CPF WN Sumps
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Cr-51	Ci				
Mn-54	Ci				
Co-57	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				
Na-24	Ci				
Fe-59	Ci				
Ce-144	Ci				
Zn-65	Ci				
Tc-99m	Ci				
Ba-142	Ci				
La-140	Ci				
Ag-110m	Ci				
Hf-181	Ci				
Sb-122	Ci				
Sb-124	Ci				
Sb-125	Ci				
Sb-126	Ci				
Cs-134	Ci				
Cs-137	Ci				
Cs-138	Ci				
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci				
Ru-106	Ci				
Nb-95	Ci				
Nb-97	Ci				
Fe-55	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				

Table 2.3-4
 Millstone Unit No. 3
 Liquid Effluents - Batch - CPF WN Sumps
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total
Xe-131m	Ci				
Xe-133	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
Total Activity	Ci				

Table 2.3-4
Millstone Unit No. 3
Liquid Effluents - Batch - CPF WN Sumps
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Cr-51	Ci				
Mn-54	Ci				
Co-57	Ci				
Co-58	Ci				
Co-60	Ci				
I-131	Ci				
I-132	Ci				
I-133	Ci				
I-134	Ci				
I-135	Ci				
Na-24	Ci				
Fe-59	Ci				
Ce-144	Ci				
Zn-65	Ci				
Tc-99m	Ci				
Ba-142	Ci				
La-140	Ci				
Ag-110m	Ci				
Hf-181	Ci				
Sb-122	Ci				
Sb-124	Ci				
Sb-125	Ci				
Sb-126	Ci				
Cs-134	Ci				
Cs-137	Ci				
Cs-138	Ci				
Ce-141	Ci				
Rb-88	Ci				
Rb-89	Ci				
Ba-139	Ci				
Ru-106	Ci				
Nb-95	Ci				
Nb-97	Ci				
Fe-55	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				
Gross Alpha	Ci				
H-3	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				

Table 2.3-4
 Millstone Unit No. 3
 Liquid Effluents - Batch - CPF WN Sumps
No Activity Detected

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total
Xe-131m	Ci				
Xe-133	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
Total Activity	Ci				

Table 2.3-5
Millstone Unit No. 3
Airborne Effluents - Sum Of All Releases

Unit	Third Quarter 1992			
	July	August	September	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci		7.42E-02	1.85E-01	2.59E-01
2. Average Period Release Rate	uCi/sec		3.07E-02	6.13E-02	3.06E-02

B. Iodines

1. Total I-131 Activity Released	Ci	4.01E-05	3.17E-05	7.84E-05	1.50E-04
2. Average Period Release Rate	uCi/sec	1.33E-05	1.31E-05	2.60E-05	1.78E-05

C. Particulates

1. Total Particulate Activity Released	Ci	3.13E-07		2.59E-04	2.60E-04
2. Average Diluted Activity	uCi/sec	1.04E-07		8.59E-05	3.07E-05
3. Total Gross Alpha Activity Released	Ci	5.16E-07	8.15E-09	5.49E-07	1.07E-06

D. Tritium

1. Total Activity Released	Ci	6.42E+00			6.42E+00
2. Average Period Release Rate	uCi/sec	2.13E+00			7.59E-01

Table 2.3-5
Millstone Unit No. 3
Airborne Effluents - Sum Of All Releases

Unit	Fourth Quarter 1992			
	October	November	December	Total

A. Fission and Activation Gases

1. Total Activity Released	Ci	4.14E-03		2.91E-01	2.95E-01
2. Average Period Release Rate	uCi/sec	1.71E-03		1.19E-01	4.05E-02

B. Iodines

1. Total I-131 Activity Released	Ci	4.79E-05	4.21E-05	3.54E-05	1.25E-04
2. Average Period Release Rate	uCi/sec	1.98E-05	1.74E-05	1.45E-05	1.72E-05

C. Particulates

1. Total Particulate Activity Released	Ci	2.35E-04	4.60E-05	2.13E-07	2.81E-04
2. Average Diluted Activity	uCi/sec	9.69E-05	1.90E-05	8.73E-08	3.86E-05
3. Total Gross Alpha Activity Released	Ci	2.96E-09	4.00E-09	3.03E-09	9.99E-09

D. Tritium

1. Total Activity Released	Ci	5.86E-02	7.63E+00		7.69E+00
2. Average Period Release Rate	uCi/sec	2.42E-02	3.15E+00		1.06E+00

Table 2.3-6
Millstone Unit No. 3
Airborne Effluents - Mixed Continuous - Normal Ventilation

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci	4.01E-05	3.17E-05	7.81E-05	1.50E-04
I-133	Ci	6.60E-06	5.24E-06	4.98E-06	1.68E-05

3. Particulates

Cr-51	Ci			1.22E-05	1.22E-05
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci			2.38E-04	2.38E-04
Co-60	Ci			6.67E-06	6.67E-06
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
	Ci				
Sr-89	Ci			2.36E-06	2.36E-06
Sr-90	Ci				
Total Activity	Ci			2.59E-04	2.59E-04

H-3	Ci				
Gross Alpha	Ci	5.08E-07		5.38E-07	1.05E-06

Table 2.3-6
Millstone Unit No. 3
Airborne Effluents - Mixed Continuous - Normal Ventilation

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci			2.91E-01	2.91E-01
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci			2.91E-01	2.91E-01

2. Iodines

I-131	Ci	4.68E-05	4.21E-05	3.54E-05	1.24E-04
I-133	Ci	2.91E-05	4.48E-05	7.58E-05	1.50E-04

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci	2.29E-04			2.29E-04
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci	2.73E-06			2.73E-06
Cs-137	Ci	2.83E-06			2.83E-06
Ba-140	Ci				
Ce-141	Ci		3.87E-06		3.87E-06
Ce-144	Ci				
Mo-99	Ci				
Be-7	Ci		2.78E-05		2.78E-05
Sr-89	Ci				
Sr-90	Ci		1.41E-05		1.41E-05
Total Activity	Ci	2.35E-04	4.58E-05		2.80E-04

H-3	Ci		7.63E+00		7.63E+00
Gross Alpha	Ci				

Table 2.3-7
Millstone Unit No. 3
Airborne Effluents - Mixed Continuous - ESF Building Ventilation

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci		7.42E-02	1.85E-01	2.59E-01
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci		7.42E-02	1.85E-01	2.59E-01

2. Iodines

I-131	Ci			3.22E-07	3.22E-07
I-133	Ci			3.84E-07	3.84E-07

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci			5.37E-08	5.37E-08
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
Be-7	Ci	3.13E-07			3.13E-07
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci	3.13E-07		5.37E-08	3.67E-07

H-3	Ci	6.42E+00			6.42E+00
Gross Alpha	Ci	8.12E-09	8.15E-09	1.11E-08	2.74E-08

Table 2.3-7
Millstone Unit No. 3
Airborne Effluents - Mixed Continuous - ESF Building Ventilation

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci	1.02E-07			1.02E-07
I-133	Ci	9.48E-08			9.48E-08

3. Particulates

Cr-51	Ci		2.00E-07		2.00E-07
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
Be-7	Ci			2.13E-07	2.13E-07
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci		2.00E-07	2.13E-07	4.13E-07

H-3	Ci				
Gross Alpha	Ci	2.96E-09	4.00E-09	3.03E-09	9.99E-09

Table 2.3-8
Millstone Unit No. 3
Airborne Effluents - Mixed Batch - Containment Drawdown
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
Be-7	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.3-8
Millstone Unit No. 3
Airborne Effluents - Mixed Batch - Containment Drawdown

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
	Ci				
	Ci				
	Ci				
Total Activity	Ci				

H-3	Ci	1.33E-04			1.33E-04
Gross Alpha	Ci				

Table 2.3-9
Millstone Unit No. 3
Airborne Effluents - Mixed Batch - Containment Purges
No Activity Detected

Nuclides Released	Unit	Third Quarter 1992			
		July	August	September	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci				

2. Iodines

I-131	Ci				
I-133	Ci				

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
Be-7	Ci				
Sr-89	Ci				
Sr-90	Ci				
Total Activity	Ci				

H-3	Ci				
Gross Alpha	Ci				

Table 2.3-9
Millstone Unit No. 3
Airborne Effluents - Mixed Batch - Containment Purges

Nuclides Released	Unit	Fourth Quarter 1992			
		October	November	December	Total

1. Fission Gases

Kr-85	Ci				
Kr-85m	Ci				
Kr-87	Ci				
Kr-88	Ci				
Kr-89	Ci				
Xe-131m	Ci				
Xe-133	Ci	3.35E-03			3.35E-03
Xe-133m	Ci				
Xe-135	Ci	7.86E-04			7.86E-04
Xe-135m	Ci				
Xe-138	Ci				
Ar-41	Ci				
	Ci				
	Ci				
Total Activity	Ci	4.14E-03			4.14E-03

2. Iodines

I-131	Ci	1.03E-06			1.03E-06
I-133	Ci	9.57E-07			9.57E-07

3. Particulates

Cr-51	Ci				
Mn-54	Ci				
Fe-59	Ci				
Co-58	Ci				
Co-60	Ci				
Zn-65	Ci				
I-131	Ci				
Cs-134	Ci				
Cs-137	Ci				
Ba-140	Ci				
Ce-141	Ci				
Ce-144	Ci				
Mo-99	Ci				
	Ci				
	Ci				
	Ci				
Total Activity	Ci				

H-3	Ci	5.85E-02			5.85E-02
Gross Alpha	Ci				

3.0 Radioactive Solid Waste

Summaries of solid waste shipment for each unit are given in the attached Tables. The principal radionuclides were considered to be those included on the shipping manifest.

Solidification Agent(s):

Portland 1 Cement

Types and Typical Volumes of Containers:

55 gallon steel drum DOT 17-H container

202 ft³ steel container

87 ft³ LSA steel box

132 ft³ Polyethylene high integrity container

173 ft³ Polyethylene high integrity container

202 ft³ Polyethylene high integrity container

92.7 ft³ steel box

TABLE 3

**Effluent and Waste Disposal Semiannual Report
Solid Waste and Irradiated Component Shipments**

Millstone Unit 1

July 1, 1992 - December 31, 1992

1. Type of Waste	Disposition	Units	6-Month Period Totals	Estimated Total Error, %
a) Spent Resin, Filter Sludge, Evaporator Bottoms, Etc.	(CNSI)	m ³	62.1	
	Burial	Ci	5.58E+02	25%
	(SEG)	m ³	0	
	Supercompaction	Ci	0	N/A
b) Dry Compressible Waste, Contaminated Equipment, Etc.	(CNSI)	m ³	21.6	
	Burial	Ci	1.02E+00	25%
	(SEG)	m ³	12.9	
	Supercompaction	Ci	1.22E-01	25%
	(SEG)			
	Burial	m ³	0	
	CNSI	Ci	0	N/A
	(SEG)			
	Burial	m ³	23.7	
USEcology	Ci	2.03E-01	25%	
	(Quadrex)	m ³	28.4	
	Decontamination	Ci	2.32E-02	25%
	(Quadrex)			
	Burial	m ³	23.8	
	CNSI	Ci	1.06E+00	25%
	(Quadrex)			
	Burial	m ³	0.7	
USEcology	Ci	3.01E-02	25%	
c) Irradiated Components, Control Rods, Etc.	(CNSI)	m ³	4.8	
	Burial	Ci	2.29E+04	N/A

2. Estimates of Major Nuclide Composition (By Type of Waste)

a) Spent Resin, Filter Sludges, Evaporator Bottoms

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	0.02%
C-14	0.06%
Cr-51	21.83%
Mn-54	3.89%
Fe-55	8.73%
Co-58	1.08%
Fe-59	0.16%
Co-60	4.99%
Ni-63	0.35%
Zn-65	54.66%
Sr-89	<0.01%
Sr-90	0.01%
Mo-99	0.01%
Ag-110m	0.26%
I-131	0.01%
Cs-134	0.02%
Cs-137	3.88%
La-140	0.01%
Ce-141	<0.01%
Np-237	<0.01%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	<0.01%
Cm-242	<0.01%
Pu-242	<0.01%
Cm-244	<0.01%

Millstone to SEG for Supercompaction

Nuclide	% of Total
None	N/A

b) Dry Compressible Waste, Contaminated Equipment, Etc.

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	0.36%
Cr-51	0.34%
Mn-54	3.30%
Fe-55	63.99%
Co-60	26.59%
Ni-63	2.21%
Zn-65	2.08%
Sr-90	0.23%
Sb-125	0.35%
Pu-241	0.57%

Millstone to SEG for Supercompaction

Nuclide	% of Total
H-3	9.81%
Cr-51	1.28%
Mn-54	4.76%
Fe-55	62.78%
Co-58	0.01%
Co-60	15.11%
Ni-63	0.02%
Zn-65	4.02%
Nb-95	<0.01%
Ag-110m	<0.01%
Cs-134	0.01%
Cs-137	0.05%
Ce-141	<0.01%
Pu-241	2.14%
Kr-85	<0.01%
Pb-210	<0.01%
Ra-226	<0.01%
Th-234	<0.01%
Ag-108m	<0.01%

SEG to CNSI for Burial

Nuclide	% of Total
None	N/A

SEG to US Ecology for Burial

Nuclide	% of Total
H-3	1.72%
C-14	0.11%
Cr-51	0.40%
Mn-54	3.36%
Fe-55	66.83%
Co-57	0.05%
Co-58	2.58%
Co-60	14.92%
Ni-63	2.57%
Zn-65	1.71%
Sr-89	<0.01%
Sr-90	0.03%
Nb-95	0.02%
Zr-95	0.03%
Tc-99	0.01%
Ag-110m	0.06%
Cs-134	2.00%
Cs-137	3.26%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.35%
Cm-242	<0.01%
Cm-244	<0.01%

Millstone to Quadrex for Decontamination

Nuclide	% of Total
H-3	10.00%
C-14	<0.01%
Cr-51	1.07%
Mn-54	2.13%
Fe-55	54.94%
Co-58	1.71%
Co-60	13.32%
Ni-63	3.71%
Zn-65	1.36%
Nb-95	0.03%
Zr-95	0.12%
Cs-134	3.90%
Cs-137	7.71%
Pu-241	0.16%

Quadrex to CNSI for Burial

Nuclide	% of Total
H-3	14.72%
C-14	<0.01%
Cr-51	<0.01%
Mn-54	1.93%
Fe-55	61.79%
Co-58	<0.01%
Co-60	16.04%
Ni-63	1.90%
Zn-65	1.01%
Nb-95	<0.01%
Zr-95	<0.01%
Cs-134	<0.01%
Cs-137	1.83%
Pu-241	<0.01%

c) Irradiated Components, Control Rods, Etc.

Millstone to CNSI for Burial

Nuclide	%Total
H-3	<0.01%
C-14	0.01%
Cr-51	<0.01%
Mn-54	2.05%
Fe-55	56.85%
Co-58	0.06%
Fe-59	<0.01%
Ni-59	0.03%
Co-60	35.41%
Ni-63	5.19%
Sr-90	<0.01%
Nb-94	<0.01%
Tc-99	<0.01%
Cs-137	<0.01%
U-232	<0.01%
U-233	<0.01%
U-234	<0.01%
U-235	<0.01%
Np-236	<0.01%
U-236	<0.01%
U-238	<0.01%
Hf-175	0.02%
Hf-181	0.02%
Ta-182	0.36%
Np-237	<0.01%
Pu-238	<0.01%
Pu-239	<0.01%
Pu-240	<0.01%
Am-241	<0.01%
Pu-241	<0.01%
Cm-242	<0.01%
Pu-242	<0.01%
Am-243	<0.01%
Cm-243	<0.01%
Cm-244	<0.01%

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
15	Truck (Sole Use Vehicle)	Chem-Nuclear Services, Inc. Barnwell, SC
0	Truck (Sole Use Vehicle)	Scientific Ecology Group Oak Ridge, TN
0	Truck (Sole Use Vehicle)	Quadrex Oak Ridge, TN

Effluent and Waste Disposal Semiannual Report **Solid Waste and Irradiated Component Shipments**

Millstone Unit 2

July 1, 1992 - December 31, 1992

1. Type of Waste	Disposition	Units	6-Month Period Totals	Estimated Total Error, %
a) Spent Resin, Filter Sludge, Evaporator Bottoms, Etc.	(CNSI)	m ³	34.9	
	Burial	Ci	9.71E+02	25%
	(SEG)	m ³	2.5	
	Supercompaction	Ci	2.54E-04	25%
b) Dry Compressible Waste, Contaminated Equipment, Etc.	(CNSI)	m ³	640.3	
	Burial	Ci	2.70E+03	25%
	(SEG)	m ³	116.9	
	Supercompaction	Ci	9.29E-02	25%
	(SEG)	m ³	0	
	Burial	Ci	0	N/A
	(SEG)	m ³	22.4	
	US Ecology	Ci	2.17E-01	25%
	(Quadrex)	m ³	139.6	
	Decontamination	Ci	8.81E-02	25%
	(Quadrex)	m ³	3.0	
	Burial	Ci	1.32E-01	25%
	(Quadrex)	m ³	0.1	
	USEcology	Ci	3.74E-03	25%
c) Irradiated Components, Control Rods, Etc.	(CNSI)	m ³	2.0	
	Burial	Ci	1.44E+00	25%

2. Estimates of Major Nuclide Composition (By Type of Waste)

a) Spent Resin, Filter Sludges, Evaporator Bottoms

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	<0.01%
C-14	0.63%
Cr-51	<0.01%
Mn-54	0.61%
Fe-55	11.17%
Co-57	0.03%
Co-58	0.98%
Fe-59	<0.01%
Co-60	27.82%
Ni-63	25.54%
Sr-89	0.01%
Sr-90	0.06%
Nb-95	<0.01%
Zr-95	0.01%
Tc-99	0.03%
Ru-103	<0.01%
Ru-106	<0.01%
Ag-110m	0.01%
Sb-124	<0.01%
Sb-125	0.20%
I-129	<0.01%
Cs-134	9.76%
Cs-137	23.07%
Ce-144	<0.01%
Np-237	<0.01%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.05%
Cm-242	<0.01%
Pu-242	<0.01%
Cm-243	<0.01%
Cm-244	<0.01%

Millstone to SEG for Supercompaction

Nuclide	% of Total
Co-60	100.00%

b) Dry Compressible Waste, Contaminated Equipment, Etc.

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	<0.01%
C-14	1.11%
Cr-51	2.27%
Mn-54	0.74%
Fe-55	25.86%
Co-57	0.08%
Co-58	8.88%
Fe-59	0.10%
Co-60	40.34%
Ni-63	14.41%
Sr-89	0.01%
Sr-90	0.04%
Nb-95	0.98%
Zr-95	0.90%
Ru-103	0.58%
Ru-106	2.39%
Ag-110m	0.06%
Sb-124	0.08%
Sb-125	0.32%
Cs-134	0.05%
Cs-137	0.15%
Ce-141	0.03%
Ce-144	0.52%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.12%
Cm-242	<0.01%
Cm-244	<0.01%

Millstone to SEG for Supercompaction

Nuclide	% of Total
H-3	29.17%
Cr-51	0.01%
Mn-54	0.02%
Fe-55	15.14%
Co-58	0.99%
Co-60	21.79%
Ni-63	7.59%
Zn-65	0.01%
Nb-95	<0.01%
Ag-110m	<0.01%
Cs-134	7.31%
Cs-137	17.95%
Ce-141	<0.01%
Kr-41	<0.01%
Pb-210	<0.01%
Ra-226	<0.01%
Th-234	<0.01%
Ag-108m	<0.01%

SEG to CNSI for Burial

Nuclide	% of Total
None	N/A

SEG to US Ecology for Burial

Nuclide	% of Total
H-3	1.83%
C-14	0.03%
Cr-51	0.62%
Mn-54	2.62%
Fe-55	45.02%
Co-57	0.01%
Co-58	0.84%
Co-60	16.02%
Ni-63	2.88%
Zn-65	2.03%
Sr-89	<0.01%
Sr-90	0.01%
Nb-95	<0.01%
Zr-95	<0.01%
Tc-99	<0.01%
Ag-110m	0.01%
Cs-134	10.00%
Cs-137	17.38%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.88%
Cm-242	<0.01%
Cm-244	<0.01%

Millstone to Quadrex for Decontamination

Nuclide	% of Total
H-3	14.45%
C-14	<0.01%
Cr-51	0.72%
Mn-54	1.38%
Fe-55	41.76%
Co-58	1.55%
Co-60	16.70%
Ni-63	5.29%
Zn-65	0.84%
Nb-95	0.03%
Zr-95	0.09%
Cs-134	5.38%
Cs-137	11.74%
Pu-241	0.07%

Quadrex to CNSI for Burial

Nuclide	% of Total
H-3	13.85%
C-14	<0.01%
Cr-51	<0.01%
Mn-54	<0.01%
Fe-55	36.00%
Co-58	1.32%
Co-60	19.63%
Ni-63	6.44%
Zn-65	<0.01%
Nb-95	<0.01%
Zr-95	<0.01%
Cs-134	6.27%
Cs-137	14.37%
Pu-241	<0.01%

Quadrex to US Ecology for Burial

Nuclide	% of Total
H-3	13.82%
C-14	0.15%
Cr-51	0.44%
Mn-54	0.91%
Fe-55	36.13%
Co-58	1.32%
Co-60	19.63%
Ni-63	6.41%
Zn-65	0.60%
Nb-95	0.04%
Zr-95	0.02%
Cs-134	6.26%
Cs-137	14.27%
Pu-241	0.07%

c) Irradiated Components, Control Rods, Etc.

Millstone to CNSI for Burial

Nuclide	% of Total
Mn-54	3.30%
Fe-55	95.14%
Ni-59	0.01%
Co-60	0.06%
Ni-63	1.50%

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
21	Truck (Sole Use Vehicle)	Chem-Nuclear Services, Inc. Barnwell, SC
4	Truck (Sole Use Vehicle)	Scientific Ecology Group Oak Ridge, TN
6	Truck (Sole Use Vehicle)	Quadrex Oak Ridge, TN

Effluent and Waste Disposal Semiannual Report

Solid Waste and Irradiated Component Shipments

Millstone Unit 3

July 1, 1992 - December 31, 1992

1. Type of Waste	Disposition	Units	6-Month Period Totals	Estimated Total Error, %
a) Spent Resin, Filter Sludge, Evaporator Bottoms, Etc.	(CNSI)	m ³	8.1	
	Burial	Ci	1.14E+02	25%
	(SEG)	m ³	2.5	
	Supercompaction	Ci	5.48E-02	25%
b) Dry Compressible Waste, Contaminated Equipment, Etc.	(CNSI)	m ³	5.4	
	Burial	Ci	2.94E-01	25%
	(SEG)	m ³	1.0	
	Supercompaction	Ci	4.00E-03	25%
	(SEG)	m ³	0	
	Burial	Ci	0	N/A
	(SEG)	m ³	1.4	
	Burial	Ci	1.84E-02	25%
	(Quadrex)	m ³	6.2	
	Decontamination	Ci	3.90E-03	25%
	(Quadrex)	m ³	0.4	
	Burial	Ci	1.87E-02	25%
	(Quadrex)	m ³	1.25E-02	
	Burial	Ci	5.32E-04	25%
c) Irradiated Components, Control Rods, Etc.	(CNSI)	m ³	0	
	Burial	Ci	0	N/A

2. Estimates of Major Nuclide Composition (By Type of Waste)

a) Spent Resin, Filter Sludges, Evaporator Bottoms

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	<0.01%
C-14	<0.01%
Mn-54	2.96%
Fe-55	10.79%
Co-57	0.16%
Co-58	4.63%
Co-60	17.08%
Ni-63	18.98%
Zn-65	<0.01%
Sr-89	<0.01%
Sr-90	0.07%
Nb-95	0.02%
Zr-95	0.08%
Tc-99	0.29%
Ag-110m	0.02%
Sb-125	0.94%
Cs-134	14.79%
Cs-137	29.13%
Ce-144	<0.01%
Sn-113	<0.01%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.04%
Cm-242	<0.01%
Pu-242	<0.01%
Cm-244	<0.01%

Millstone to SEG for Supercompaction

Nuclide	% of Total
H-3	0.12%
C-14	0.02%
Fe-55	12.60%
Co-58	0.60%
Co-60	1.99%
Ni-63	1.04%
Sr-89	<0.01%
Sr-90	<0.01%
Cs-134	32.87%
Cs-137	50.76%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	<0.01%
Cm-242	<0.01%
Pu-242	<0.01%
Cm-244	<0.01%

b) Dry Compressible Waste, Contaminated Equipment, Etc.

Millstone to CNSI for Burial

Nuclide	% of Total
H-3	0.23%
Cr-51	2.67%
Mn-54	1.80%
Fe-55	60.88%
Co-58	6.19%
Co-60	5.48%
Ni-63	2.50%
Nb-95	1.99%
Zr-95	1.00%
Cs-134	8.37%
Cs-137	8.84%

Millstone to SEG for Supercompaction

Nuclide	% of Total
H-3	94.34%
Cr-51	0.04%
Mn-54	0.07%
Fe-55	3.87%
Co-58	0.06%
Co-60	0.73%
Ni-63	0.21%
Zn-65	0.05%
Nb-95	<0.01%
Ag-110m	<0.01%
Cs-134	0.11%
Cs-137	0.52%
Ce-141	<0.01%
Kr-41	<0.01%
Pb-210	<0.01%
Ra-226	<0.01%
Th-234	<0.01%
Ag108m	<0.01%

SEG to CNSI for Burial

Nuclide	% of Total
None	N/A

SEG to US Ecology for Burial

Nuclide	% of Total
H-3	1.30%
C-14	0.10%
Cr-51	<0.01%
Mn-54	1.83%
Fe-55	50.22%
Co-57	0.05%
Co-58	2.73%
Co-60	11.98%
Ni-63	3.37%
Zn-65	0.46%
Sr-89	<0.01%
Sr-90	0.03%
Nb-95	0.02%
Zr-95	0.03%
Tc-99	0.01%
Ag-110m	0.05%
Cs-134	10.49%
Cs-137	16.87%
Pu-238	<0.01%
Pu-239	<0.01%
Am-241	<0.01%
Pu-241	0.02%
Cm-242	<0.01%
Cm-244	<0.01%

Millstone to Quadrex for Decontamination

Nuclide	% of Total
H-3	10.20%
C-14	<0.01%
Cr-51	1.03%
Mn-54	2.09%
Fe-55	54.53%
Co-58	1.64%
Co-60	13.48%
Ni-63	3.79%
Zn-65	1.28%
Zr-95	0.16%
Cs-134	3.88%
Cs-137	7.82%
Pu-241	0.14%

4.4 Batch Releases

Liquid	Unit 1	Unit 2	Unit 3
a. Number of Batches	151	130	320
b. Total Time (Minutes)	11,086	17,164	23,116
c. Maximum Time (Minutes)	224	697	230
d. Average Time (Minutes)	73	132	72
e. Minimum Time (Minutes)	23	4	8
f. Average Stream Flow	Not Applicable-Ocean Site		

Airborne	Unit 2 Purge	Unit 2 WGDT	Unit 3 Purge	Unit 3 Drawdown
a. Number of Batches	0	1	1	1
b. Total Time (Minutes)	0	44	34	46
c. Maximum Time (Minutes)	0	44	34	46
d. Average Time (Minutes)	0	44	34	46
e. Minimum Time (Minutes)	0	44	34	46

4.5 Abnormal Releases - None

5.0 Changes

There were no changes to the REMM/ODCM/PCP during this report period
July 1 - December 31, 1992.

6.0 Effluent Monitor Inoperability

During this report period, July 1 through December 31, 1992, the following monitors were inoperable for more than 30 days:

a. Unit 3 Liquid Waste Discharge Monitor (3LWS-70)

The Liquid Waste Discharge Monitor was administratively declared inoperable on June 13, 1992. This inoperability is a result of a check source failure because the built-in check source no longer has sufficient strength to exceed the increased monitor background. This is a result of plateout of contamination on the sample line. Based on functional checks and calibrations, the monitor will perform its intended function and has sufficient sensitivity to detect activity well below release rate limits. The monitor is in service during all discharges. Because of the administrative inoperability, redundant sampling and valve line-ups are performed in accordance with Technical Specification action statements. Options to eliminate the check source failure are being evaluated.

b. Unit 3 Steam Generator Blowdown Monitor (3SSR-RE-08)

The Steam Generator Blowdown Monitor was declared inoperable on September 14, 1992 due to low flow alarms. The monitor remains in service and based on functional checks and calibrations would perform its intended function. During the period there was no detectable activity released to the environment from blowdown. Normally, all blowdown is recovered. Options to eliminate the low flow alarms are being evaluated.