



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

April 26, 2007

Docket No. 50-213

CY-07-072

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Haddam Neck Plant
Annual Radioactive Effluent Release Report

In accordance with the requirements of 10CFR50.36a and Section 2.6.2 of Appendix C of the Quality Assurance Program (QAP) for the Haddam Neck Plant (HNP), a copy of the Annual Radioactive Effluent Release Report is included as Attachment 1. It covers the period of January through December 2006. This report includes a summary of the quantities of solid radioactive waste and liquid and gaseous effluents, as well as a summary of the assessment of maximum individual and population dose resulting from routine radioactive airborne and liquid effluents.

Additionally, this report is submitted to the Connecticut Department of Environmental Protection in accordance with Section 4(D) of the NPDES Permit (Permit ID: CT0003123).

If you have any questions regarding this submittal, please call me at (860) 267-3196.

Sincerely,

Gerard van Noordennen

Gerard P. van Noordennen

Director of Nuclear Safety/Regulatory Affairs

4-26-07

Date

Attachment: Annual Radioactive Effluent Report

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HADDAM NECK PLANT

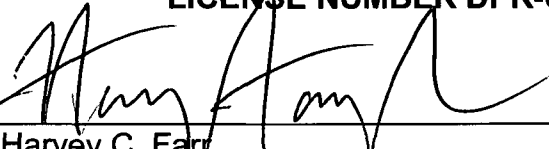
**CONNECTICUT YANKEE ATOMIC POWER COMPANY
Haddam, Connecticut**


ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January-December 2006

Docket No. 50-213

LICENSE NUMBER DPR-61

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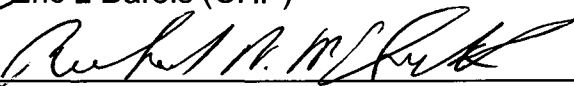
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1.0 INTRODUCTION

As required by the Connecticut Yankee Quality Assurance Program (QAP), this Annual Radioactive Effluent Release Report for the year 2006 is submitted in accordance with 10 CFR 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors." A summary of the quantities of Radioactive Liquid and Gaseous Effluents and Solid Waste released from the Haddam Neck Plant is presented in this document. The material provided is consistent with the objectives outlined in the Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMDCM). The information submitted is formatted to the general outline described in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants".

Haddam Neck is currently in the process of decommissioning. In support of the decommissioning effort, radioactive liquid was processed and batch released from Temporary FRAC Tanks in 2006. The radwaste system utilized filters and demineralizers to process radioactive liquid prior to controlled release to the environment. The RCA Yard Drain System which was categorized as a continuous release liquid pathway was removed in 2005. Therefore, all liquid releases in 2006 were batch releases. Non-radioactive or nominally contaminated ground water derived from construction related activities was treated to remove suspended solids and to adjust pH to meet non-radiological effluent release criteria. This water was also monitored for radiological contaminants through sample collection, compositing, and analysis. Radionuclides detected above the Lower Limit of Detection (LLD) were included in the compilation of effluent releases presented in this report.

The mixed mode elevated gaseous release pathway from the Main Stack was removed during 2004. The temporary ventilation units that replaced the former stack continue to be included in the gaseous effluent monitoring program until the second quarter of 2006 when decontamination of the spent fuel building for demolition was complete. The Alternate Containment Access, Alternate Containment, Containment Foyer, and Containment Tent are examples of miscellaneous pathways that were routinely monitored until the second quarter of 2006, after which decontamination of the containment for demolition was complete and demolition was in progress.

2.0 Summary

Tables 1 through 9 summarize the quantity of radioactive gaseous and liquid effluents, respectively, for each quarter of 2006. The gaseous release tables are a summation of all monitored release points in 2006 (i.e., Spent Fuel Building exhaust, CTMT Foyer, CTMT Lower Level Access, and CTMT Alternate Access Point). Due to the demolition of the Spent Fuel Building and Containment Structures in 2006, ventilation systems for these structures were only operable in the first two quarters of 2006. No gaseous effluents were generated in the 3rd and fourth quarters of 2006. Structures such as the Containment and Spent Fuel Building were decontaminated to levels below which radiological controls and environmental monitoring were not required during demolition.

The liquid release tables are a summation of continuous and batch releases from all monitored release points for 2006. Table 10 provides the quarterly and annual doses from liquids, particulate and gaseous effluents to the whole body and maximally exposed organ. Table 11 summarizes the waste that was shipped off-site for burial or disposal during the year 2006.

The radioactive effluent monitoring program for 2006 was conducted in accordance with QAP Appendix C, Section 2.5. The results of the monitoring program indicate that the Haddam Neck Plant was successful in maintaining radioactive effluent releases to the environment as low as reasonably achievable.

The effluent dose contributions for this report are significantly less than regulatory limits.

3.0 Supplemental Information

3.1 Regulatory Limits

This program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the dose to MEMBERS OF THE PUBLIC from radioactive effluents as low as is reasonably achievable. The program shall be contained in the REMODCM, shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

- a. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation, including surveillance tests and set point determinations, in accordance with the methodology described in the REMODCM;
- b. Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to the pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to

20.602), Table II, Column 2;

- c. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters described in the REMODCM;
- d. Limitations on the annual and quarterly doses or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from the facility to unrestricted areas, conforming to 10 CFR Part 50, Appendix I;
- e. Determination of cumulative dose contributions from radioactive effluents for the current calendar year in accordance with the methodology and parameters described in the REMODCM performed at least every 92 days. A determination of projected dose contributions from radioactive effluents in accordance with the methodology in the REMODCM performed at least every 92 days.
- f. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a period of 31 days would exceed 2% of the guidelines for the annual dose or dose commitment, conforming to 10 CFR Part 50, Appendix I;
- g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the SITE BOUNDARY shall be as follows:
 - 1. for noble gases: less than or equal to a dose rate of 500 mrem/yr to the total body and less than or equal to a dose of 3000 mrem/yr to the skin; and
 - 2. for tritium and all radionuclides in particulate form with half-lives greater than 7 days; less than or equal to a dose rate of 1500 mrem/yr to any organ;
- h. Limitations on the annual and quarterly air doses from noble gases released in gaseous effluents from the unit to areas beyond the SITE BOUNDARY, conforming to 10 CFR Part 50, Appendix I;
- i. Limitations on the annual and quarterly doses to a MEMBER OF THE PUBLIC from tritium and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each facility to areas beyond the SITE BOUNDARY, conforming to 10 CFR Part 50, Appendix I; and
- j. Limitations on the annual dose or dose commitment to any MEMBER OF THE PUBLIC at points beyond the SITE BOUNDARY due to releases of radioactivity and to radiation from uranium fuel cycle

sources, confirming to 40 CFR Part 190.

3.2 Maximum Permissible Effluent Concentrations

a.	Fission and activation gases	Pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to 20.602), Table II, Column 1
b.	Iodines	Pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to 20.602), Table II, Column 1
c.	Particulates, (half lives>8 days)	Pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to 20.602), Table II, Column 1
d.	Liquid Effluents	Pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to 20.602), Table II, Column 2
e.	Total noble gas concentration	Pre-1994 concentration values in 10 CFR Part 20, Appendix B (from 20.1 to 20.602), Table II, Column 1

3.3 Average Energy – Not Applicable

3.4 Measurements and Approximations of Radioactivity

a. Fission and Activation Gases

Continuous Discharge – The Fuel Building Exhaust Vent, samples are analyzed monthly. Alternate Containment Access, Alternate Containment, Containment Foyer, and Containment Tent are examples of miscellaneous pathways that were routinely monitored. Activity levels determined are assumed constant for the surveillance interval.

Batch Discharges – There were no batch releases via this pathway in 2006.

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

b. Iodine's

Iodine surveillance no longer applies due to the elapsed time since final plant shutdown from power operations.

c. Particulates

Particulate release pathways were continuously sampled using air filters. The particulate filters were analyzed weekly for gamma radioactivity, monthly for gross alpha and gross beta activity. Particulate filters exhibiting a positive gross beta were saved for quarterly Sr-90 analysis. The results for radioactivity

from gaseous effluents and the effluent flow rate were used to determine the total amount of activity released. Detected particulate activity is reported in Tables 1 through 4.

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

d. Liquid Effluents

Continuous Discharges

The RCA Yard Drain was removed in 2005. There were no continuous liquid releases in 2006.

Batch Releases

Each batch release was sampled and analyzed for tritium and gamma emitting radionuclides prior to release. Composite samples were analyzed monthly for gross alpha and quarterly for Fe-55 and Sr-90. There was no detectable Fe-55 in the liquid release samples in 2006. The results of the composite analyses from the previous month or quarter were used to estimate the quantities of these radionuclides in liquid effluent during the current month or quarter in which discharges were conducted. The total radioactivity in liquid effluent releases was determined from the measured concentrations of each radionuclide present and the total volume of the effluent released during periods of discharge.

The Spent Fuel Pool was decontaminated and drained in 2006 using the Alternate Radioactive Water Processing System and batch releases from Temporary FRAC Tanks with 20,000 gallon capacity. In addition, construction activity derived ground water was collected and released using the Groundwater Treatment System which also used 20,000 gallon FRAC Tanks. Due to this the number and duration of liquid effluent batch releases increased significantly in 2006 in comparison to 2005. Groundwater treatment system releases were also sampled and analyzed as described above.

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

e. Total Noble Gas Concentration

Refer to Table 5. Spent Fuel was removed from the Spent Fuel Pool and placed in dry cask storage in 2005. The 2005 releases of Kr-85 were associated with dry cask storage process. Since this process was complete and the spent fuel had been removed to the ISFSI, there were no noble gas releases in 2006.

3.5 Batch Releases

a. Liquids

1. Number of Batch Releases: 48
2. Total time period for batch releases: 45,950 minutes
3. Maximum time period for a batch release: 5,519 minutes
4. Average time period for batch releases: 957 minutes
5. Minimum time period for a batch release: 30 minutes
6. Average stream flow during periods of release of effluents into a flowing stream: 15,500
7. Maximum gross release concentration (uCi/ml): 1.83E-3 of H-3

b. Gaseous

1. Number of batch releases: 0
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 batch release: Not Applicable
6. Maximum gross release rate (uCi/sec): Not Applicable

3.6 Unplanned Releases

a. Liquid – There were no unplanned releases in 2006

b. Gaseous – There were no unplanned releases in 2006

4.0 Related Information

Sections 4.1.1 through 4.1.4 provide the status of reportable items per requirements of the ODCM.

4.1.1 Radioactive Effluent Monitoring Instrumentation

Requirement: Radioactive effluent monitoring instrumentation channels are required to be operable in accordance with the ODCM.

With less than the minimum number of channels operable and reasonable efforts to return the instrument(s) to operable status within 30 days being unsuccessful, the ODCM requires an explanation for the delay in correcting the inoperability in the next Annual Effluent Release Report.

Response: No radioactive effluent monitoring instrumentation was out of service for more than 30 consecutive days during the reporting period when required to be operable by the Offsite Dose Calculation Manual.

4.1.2 Liquid Radwaste Treatment System

Requirement: With radioactive liquid waste being discharged without treatment, with estimated doses in excess of the limits in ODCM, a report must be submitted to the Commission in the Annual Effluent Release Report for the period.

Response: The above requirements of ODCM were met during this period, and therefore, no report is required.

4.1.3 Gaseous Radwaste Treatment System

Requirement: With radioactive gaseous waste being discharged without treatment with doses in excess of the limits in ODCM, a report must be submitted to the Commission in the Annual Effluent Release Report for the period.

Response: The above requirements of ODCM were met during this period, and therefore no report is required.

4.1.4 Lower Limit of Detection for Radiological Analysis

Requirement: ODCM requires that when unusual circumstances result in LLD's higher than required, the reasons shall be documented in the Annual Radioactive Effluent Release Report.

Response: All samples were counted in such a manner as to satisfy the specified a priori lower limits of detection.

4.2 Radioactive Effluent Condition Reports

Table 12 lists the condition reports generated during the year 2006 and actions taken to resolve the individual issues.

Condition report 06-0149 describes problems with 2005 liquid composite samples that were not re-analyzed for gross alpha. The samples were to be re-analyzed to ensure issues associated with an alpha source had not effected the reported 2005 results. Although these samples were not reanalyzed, it is unlikely to have significantly affected the data reported in the 2005 effluent report. Positive liquid alpha results were reported in the first and second quarter of 2006. As opposed to no positive results in 2005. The positive results in 2006 are attributable to the processing and discharge of Spent Fuel Pool water which had significantly higher alpha emitting radionuclide concentrations than previously released water at CY. The 2006 data shows that alpha radioactivity accounts for a small fraction of the dose from a liquid pathway as shown in the table below.

	2006 Ci	Alpha Total Body mrem	Total Body mrem	Alpha Organ mrem	Total Organ mrem
Q1	1.40E-05	1.31E-05	1.17E-01	1.37E-04	1.85E-01
Q2	1.03E-05	9.70E-06	1.34E-02	7.85E-05	2.04E-02

Therefore, if activity was released, it would not change the reported dose total in 2006. It is unlikely that the water released in 2005 had the alpha radionuclide concentration of the spent fuel pool water released in 2006.

5.0 Summary of REMODCM Revisions in the Year 2006

5.1 There were no changes to the REMODCM in 2006.

TABLE 1

Connecticut 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/D	N/D	2.50E+1
2. Average release rate for period	uCi/sec	N/D	N/D	
3. Percent of regulatory limit	%	N/D	N/D	
B. Iodines				
1. Total Iodine-131	Ci	N/A*	N/A*	2.50E+1
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	9.42E-06	1.36E-06	2.50E+1
2. Average release rate for period	uCi/sec	1.23E-06	1.74E-07	
3. Percent of regulatory limit	%	6.95E-02	2.67E-05	
4. Gross alpha radioactivity	Ci	3.6E-07	N/D	
D. Tritium				
1. Total release	Ci	N/D*	N/D*	2.50E+1
2. Average release rate for period	uCi/sec	N/D*	N/D*	
3. Percent of regulatory limit	%	N/D*	N/D*	

N/D*= Not Detected

N/A*= Not Applicable

TABLE 2

Connecticut 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*	2.50E+1
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*	2.50E+1
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*	2.50E+1
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*	2.50E+1
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 3

Connecticut Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
First and Second Quarters, 2006
Gaseous Effluents-Elevated & Ground Releases

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	1.06E-06	8.60E-08	N/A*	N/A*
Cesium-134	Ci	N/A*	N/A*	N/A*	N/A*
Cesium-137	Ci	1.25E-06	N/D*	N/A*	N/A*
Cobalt-60	Ci	6.75E-06	1.27E-06	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*
Gross Alpha	Ci	3.64E-07	N/D*	N/A*	N/A*

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

TABLE 4

Connecticut Yankee Atomic Power Station
Effluent and Waste Disposal Annual Report
Third and Fourth Quarters, 2006
Gaseous Effluents-Elevated & Ground Releases

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*
Gross Alpha	Ci	N/D*	N/D*	N/A*	N/A*

N/D*= Not Detected

N/A*= Not Applicable

TABLE 5

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

Plant;

The Main Stack was demolished in 2004. Therefore, the gaseous / particulates released from the facility are considered as a ground level release.

ISFSI;

There are no gaseous or particulate release pathways associated with ISFSI operations.

TABLE 6

Connecticut 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	1.90E-03	9.08E-04	2.50E+01
2. Average diluted concentration during period	.uCi/ml	5.60E-08	8.16E-08	
3. Percent of applicable limit	%	7.34E-01	8.84E-01	
B. Tritium				
1. Total Release	Ci	3.86E+00	1.26E+00	2.50E+01
2. Average diluted concentration during period	.uCi/ml	1.13E-04	1.13E-04	
3. Percent of applicable limit	%	3.78E+00	3.78E+00	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	N/A*	N/A*	2.50E+01
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	1.40E-05	1.03E-05	2.50E+01
2. Average diluted concentration during period	.uCi/ml	4.10E-10	9.26E-10	
3. Percent of applicable limit	%	1.03E-02	2.32E-02	
E. Volume of Waste Released (prior to dilution)	Liters	3.25E+06	4.73E+05	1.00E+01
F. Volume of Dilution Water Used During Period	Liters	3.08E+07	1.07E+07	1.00E+01

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

TABLE 7

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

	Unit	3 rd Quarter	4 th Quarter	Est. Total Error, %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	4.75E-04	3.06E-06	2.50E+01
2. Average diluted concentration during period	.uCi/ml	2.54E-06	2.43E-08	
3. Percent of applicable limit	%	2.65E+01	9.28E-01	
B. Tritium				
1. Total Release	Ci	6.82E-02	8.79E-04	2.50E+01
2. Average diluted concentration during period	.uCi/ml	3.64E-04	6.98E-06	
3. Percent of applicable limit	%	1.21E+01	2.33E-01	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	N/A*	N/A*	2.50E+01
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	0.00E+00	0.00E+00	2.50E+01
2. Average diluted concentration during period	.uCi/ml	0.00E+00	0.00E+00	
3. Percent of applicable limit	%	0.00E+00	0.00E+00	
E. Volume of Waste Released (prior to dilution)	Liters	1.53E+05	1.26E+05	1.00E+01
F. Volume of Dilution Water Used During Period	Liters	8.81E+05	8.59E+05	1.00E+01

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

TABLE 8

Connecticut 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/D*	N/D*
Strontium-90	Ci	N/A*	N/A	5.04E-05	2.00E-05
Cesium-134	Ci	N/A*	N/A	N/D*	N/D*
Cesium-137	Ci	N/A*	N/A	1.19E-03	1.20E-04
Iodine-131	Ci	N/A*	N/A	N/D*	N/D*
Cobalt-58	Ci	N/A*	N/A	N/D*	N/D*
Cobalt-60	Ci	N/A*	N/A	6.65E-04	7.68E-04
Iron-55	Ci	N/A*	N/A	N/D*	N/D*
Zinc-65	Ci	N/A*	N/A	N/D*	N/D*
Manganese-54	Ci	N/A*	N/A	N/D*	N/D*
Chromium-51	Ci	N/A*	N/A	N/D*	N/D*
Zirconium-Niobium-95	Ci	N/A*	N/A	N/D*	N/D*
Molybdenum-99	Ci	N/A*	N/A	N/D*	N/D*
Technetium-99m	Ci	N/A*	N/A	N/D*	N/D*
Barium-Lanthanum-140	Ci	N/A*	N/A	N/D*	N/D*
Cerium-141	Ci	N/A*	N/A	N/D*	N/D*
Others- Iron-55	Ci	N/A*	N/A	N/D	N/D*
Antimony-125	Ci	N/A*	N/A	N/D*	N/D*
Unidentified	Ci	N/A*	N/A	N/D*	N/D*
Total for period (above)	Ci	N/A*	N/A	1.90E-03	9.08E-04
Xenon-133	Ci	N/A*	N/A	N/D*	N/D*
Xenon-135	Ci	N/A*	N/A	N/D*	N/D*

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

TABLE 9

Connecticut 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/D*	N/D*
Strontium-90	Ci	N/A*	N/A*	7.97E-06	3.16E-07
Cesium-134	Ci	N/A*	N/A*	N/D*	N/D*
Cesium-137	Ci	N/A*	N/A*	4.12E-04	1.42E-06
Iodine-131	Ci	N/A*	N/A*	N/D*	N/D*
Cobalt-58	Ci	N/A*	N/A*	N/D*	N/D*
Cobalt-60	Ci	N/A*	N/A*	4.81E-05	1.32E-06
Iron-59	Ci	N/A*	N/A*	N/D*	N/D*
Zinc-65	Ci	N/A*	N/A*	N/D*	N/D*
Manganese-54	Ci	N/A*	N/A*	N/D*	N/D*
Chromium-51	Ci	N/A*	N/A*	N/D*	N/D*
Zirconium-Niobium-95	Ci	N/A*	N/A*	N/D*	N/D*
Molybdenum-99	Ci	N/A*	N/A*	N/D*	N/D*
Technetium-99m	Ci	N/A*	N/A*	N/D*	N/D*
Barium-Lanthanum-140	Ci	N/A*	N/A*	N/D*	N/D*
Cerium-141	Ci	N/A*	N/A*	N/D*	N/D*
Others- Iron-55	Ci	N/A*	N/A*	N/D	N/D*
Antimony-125	Ci	N/A*	N/A*	N/D*	N/D*
Unidentified	Ci	N/A*	N/A*	N/D*	N/D*
Total for period (above)	Ci	N/A*	N/A*	4.68E-04	3.06E-06
Xenon-133	Ci	N/A*	N/A*	N/D*	N/D*
Xenon-135	Ci	N/A*	N/A*	N/D*	N/D*

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

TABLE 10

Connecticut Yankee
 Maximum Off-Site Doses/Dose Commitments to Members of the Public
 from Liquid and Gaseous Effluents for 2006
 (10CFR50, Appendix I)

Source	Dose (mrem)				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year ¹⁾
Liquid Effluents					
Total Body Dose	1.17E-01	1.34E-02	4.17E-02	1.52E-04	1.72E-01
Organ Dose**	1.85E-01	2.04E-02	6.53E-02	2.45E-04	2.71E-01
Airborne Effluents					
Organ Dose (Tritium + Part.)**	6.81E-02	1.71E-03	N/A	N/A	6.98E-02
Noble Gases					
Beta Air (mrad)	N/A	N/A	N/A	N/A	N/A
Gamma Air (mrad)	N/A	N/A	N/A	N/A	N/A

** Maximum of the following age groups and organs; Adult, Teen, Child, and Bone, GI-LLI, Kidney, Liver, Lung, Thyroid

TABLE 11
Connecticut Yankee Atomic Power Station
Effluent and Waste Disposal Report
January 1st – December 31st 2006
Solid Waste and Irradiated Fuel Shipments

A. Solid Waste Shipped Offsite for Burial or Disposal (Not Irradiated Fuel)

1. Type of Waste

A. Spent Resins, Filter, Sludge, etc
 SFP Filters Legacy Sludge in 8-120

Waste Class	Unit		% Error (Ci)
A	m ³	2.24E-01	+/- 25%
	Ci	4.98E-02	
B	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	
C	m ³	4.75E+00	+/- 25%
	Ci	3.22E+00	
Total	m ³	4.97E+00	+/- 25%
	Ci	3.27E+00	

B. Dry Active Waste

DAW in Intermodal CTMT Conc in Inter Insitu Liner	DAW in B-25 NST pieces in Inter DAW in 80 gal drum	DAW in 55 gal drum CTMT Exterior in Gondo DAW in 35 gal drum	FP/TRU in 20' S/L Septic Sludge Boxes DAW in 5 gal drum
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Waste Class	Unit		% Error (Ci)
A	m ³	8.94E+04	+/- 25%
	Ci	5.94E+01	
B	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	
C	m ³	1.06E+01	+/- 25%
	Ci	1.18E+01	
Total	m ³	8.95E+04	+/- 25%
	Ci	7.12E+01	

C. Irradiated Hardware			
Waste Class	Unit		% Error (Ci)
A	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	
B	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	
C	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	
Total	m ³	0.00E+00	+/- 25%
	Ci	0.00E+00	

D. Other Waste			
N/A SFP Conc	Combine Packages South RCA Soil	Demolition Rubble In Liquid Waste 15 gal po	FP/TRU in Intermodal
Waste Class	Unit		% Error (Ci)
A	m ³	1.36E+03	+/- 25%
	Ci	8.38E-01	
B	m ³	3.62E+01	+/- 25%
	Ci	7.74E-01	
C	m ³	3.41E+00	+/- 25%
	Ci	5.38E+00	
Total	m ³	1.40E+03	+/- 25%
	Ci	6.99E+00	

E. Sum of all 4 Categories Above			
Waste Class	Unit		% Error (Ci)
A	m ³	9.08E+04	+/- 25%
	Ci	6.03E+01	
B	m ³	3.62E+01	+/- 25%
	Ci	7.74E-01	
C	m ³	1.87E+01	+/- 25%
	Ci	2.04E+01	
Total	m ³	9.09E+04	+/- 25%
	Ci	8.15E+01	

2. Estimate of Major Nuclide Composition (by type of waste).

A. Spent Resins, Filter, Sludge, etc (Class A, B & C Combined)

Nuclide	% Abundance	Curies
H-3	0.129	4.20E-03
C-14	0.577	1.89E-02
Mn-54	0.001	2.25E-05
Fe-55	30.826	1.01E+00
Co-60	39.995	1.31E+00
Ni-59	1.919	6.27E-02
Ni-63	19.840	6.49E-01
Sr-89	0.000	1.30E-07
Sr-90	0.057	1.85E-03
Nb-94	0.033	1.07E-03
Tc-99	0.001	2.31E-05
I-129	0.000	1.55E-05
Cs-134	0.215	7.03E-03
Cs-137	3.018	9.87E-02
Ce-144	0.756	2.47E-02
Eu-154	0.100	3.28E-03
Np-237	0.001	3.75E-05
Pu-238	0.234	7.64E-03
Pu-239	0.017	5.54E-04
Pu-240	0.017	5.54E-04
Pu-241	2.104	6.88E-02
Am-241	0.119	3.88E-03
Am-243	0.001	6.06E-04
Cm-242	0.000	6.78E-06
Cm-243	0.021	6.90E-04
Cm-244	0.021	6.89E-04

B. Dry Active Waste

Nuclide	% Abundance	Curies
H-3	14.923	1.06E+01
C-14	4.836	3.44E+00
Mn-54	0.000	2.21E-04
Fe-55	21.497	1.53E+01
Co-60	21.830	1.55E+01
Ni-59	0.039	2.79E-02
Ni-63	21.824	1.55E+01
Sr-90	0.260	1.85E-01
Nb-94	0.015	1.06E-02
Tc-99	0.088	6.25E-02
I-129	0.006	3.97E-03
Cs-134	0.344	2.45E-01
Cs-137	6.565	4.67E+00
Ce-144	0.637	4.54E-01
Eu-152	0.156	1.11E-01
Eu-154	0.145	1.03E-01
Pu-238	0.243	1.73E-01

Nuclide	% Abundance	Curies
Pu-239	0.053	3.80E-02
Pu-240	0.047	3.33E-02
Pu-241	6.106	4.35E+00
Am-241	0.240	1.71E-01
Cm-242	0.000	1.35E-04
Cm-243	0.078	5.56E-02
Cm-244	0.068	4.83E-02

C. Irradiated Hardware
None Shipped

D. Other Waste		
Nuclide	% Abundance	Curies
H-3	0.325	2.27E-02
C-14	0.781	5.46E-02
Mn-54	0.005	3.84E-04
Fe-55	18.857	1.32E+00
Co-60	27.098	1.89E+00
Ni-59	0.196	1.37E-02
Ni-63	21.249	1.49E+00
Kr-85	0.000	9.98E-06
Sr-90	0.457	3.20E-02
Tc-99	0.224	1.57E-02
Cd-109	0.000	9.96E-06
I-129	0.004	3.06E-04
Cs-134	0.289	2.02E-02
Cs-137	27.969	1.95E+00
Ce-144	0.493	3.45E-02
Eu-154	0.514	3.59E-02
Ra-226	0.000	2.50E-07
U-238	0.010	7.21E-04
Pu-238	0.060	4.22E-03
Pu-239	0.012	8.67E-04
Pu-240	0.012	8.58E-04
Pu-241	1.313	9.17E-02
Am-241	0.101	7.04E-03
Cm-242	0.000	3.14E-06
Cm-243	0.013	9.33E-04
Cm-244	0.015	1.07E-03

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation(Truck/Rail)	Destination
67	STUDSVIK Logistics, LLC	ALARON Corporation
3	R&R Trucking	Barnwell Waste Mgmt Facility
1	STUDSVIK Logistics, LLC	Barnwell Waste Mgmt Facility
2	Hittman Transport	Diversified Scientific Services, Inc

Number of Shipments	Mode of Transportation(Truck/Rail)	Destination
7	Hittman Transport	Duratek, Inc. (BCO)
1	R&R Trucking	Duratek, Inc. (BCO)
5	Hittman Transport	Duratek, Inc. (GR)
1	R&R Trucking	Duratek, Inc. (GR)
9	STUDSVIK Logistics, LLC	Duratek, Inc. (GR)
38	Ameritech Environmental / CSXT	Energy Solutions, LLC (Bulk)
93	Manafort Brothers, Inc.	Energy Solutions, LLC (Bulk)
84	SRS trucking	Energy Solutions, LLC (Bulk)
861	STUDSVIK Logistics, LLC	Energy Solutions, LLC (Bulk)
1	STUDSVIK Logistics, LLC	Energy Solutions, LLC (Containerized))
1756	STUDSVIK Logistics, LLC	STUDSVIK Logistics, LLC

B. Irradiated Fuel Shipments (Disposition): None Shipped

C. Additional Requirements; Summation of all Shipment Types

Waste Class	Volume (m ³)	Curies Shipped	% Error (Ci)
A	9.08E+04	6.03E+01	+/- 25%
B	3.62E+01	7.74E-01	+/- 25%
C	1.87E+01	2.04E+01	+/- 25%
Total	9.09E+04	8.15E+01	+/- 25%

**Table 12
Radioactive Effluent Condition Reports**

Condition Report #	Issue Description	Date of Discovery	Initial Corrective Actions Taken	Final Corrective Actions Taken
06-0055	Technician at GEL Laboratories dropped the Containment Foyer 4 th quarter composite after digestion, resulting in a loss of most of the sample.	2/23/2006	The remaining 1 – 2 ml that was not spilled was analyzed for Sr-90. Laboratory retrained technician on carrying small samples in baskets to prevent recurrence.	<ol style="list-style-type: none"> 1. MDA on remaining sample calculated to be 5.18E-14 uCi/ml. 2. Compared to REMODCM required LLD of 1.00E-11. Requirements of ODCM were met.
06-0123	SFB building particulate effluent monitor found unplugged. Chemistry technician found R1 unplugged when arriving at the monitor to perform the weekly particulate filter change out.	5/2/2006	Plugged monitor in, made notifications.	<ol style="list-style-type: none"> 1. Monitor was unplugged despite do not unplug tag on cord. 2. Could not be determine by whom or when. 3. Reviewed HP Environmental air samples for fuel building for time frame since R-1 sampler was last checked. 4. All results less than MDA. 5. R-1 no longer in use at time of CR closure
06-0107	R-22 Liquid Rad Monitor Alarm trip during discharge of L-25. Approximately 2 hours into the discharge of L-25, around 1400 on Friday April, 2005, R-22 Liquid Monitor alarmed and shut down the discharge.	06-0107	<ul style="list-style-type: none"> o FRAC tank was put on recirculation through the ion exchanger. o Chemistry sampled the FRAC tank to verify the original analysis results for gamma emitting isotopes. o Decision was made to polish L-25 through the ion exchanger until Saturday morning. o Chemistry sampled L-25 for 	<ol style="list-style-type: none"> 1. Detector replaced 2. Detector well replaced 3. Pre-event background levels returned. 4. Cause was contaminated detector well

Table 12
Radioactive Effluent Condition Reports

			<p><i>gamma emitting isotopes and pH.</i></p> <ul style="list-style-type: none"> ○ Gamma activity dropped significantly and a new permit was issued on the remaining 15,000 gallons. ○ R-22 original background number was slightly higher than normal; Operations flushed R-22 line prior to restarting the discharge. 	
06-0149	Some analysis results for 2005 monthly liquid composite gross alphas could not be located. Saved samples could not be located.	5/24/2006	<p>Informed management. Initiated search for results and samples. Initiated investigation into the extent of this issue. Contacted vendor lab to determine if they had any sample in storage in the event the results and/or sample could not be located.</p>	<ol style="list-style-type: none"> 1. Technician responsible for saving and counting samples had left site. 2. Personnel currently on site responsible for taking and analyzing such samples were coached and counseled on importance of environmental samples.