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TS 5.6.3

Progress Energy

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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

2005 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Ladies and Gentlemen:

Attached is the Annual Radioactive Effluent Release Report for the period of January 1, 2005, through December 31, 2005, for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. This report is submitted in accordance with 10 CFR 50.36a(a)(2) and the HBRSEP, Unit No. 2, Technical Specifications Section 5.6.3.

If you have any questions concerning this report, please contact me at 843-857-1253.

Sincerely,

C. T. Baucom
Supervisor - Licensing/Regulatory Programs

RAC/rac

Attachment

c: Dr. W. D. Travers, NRC, Region II
Mr. C. P. Patel, NRC, NRR (w/o Attachment)
NRC Resident Inspector

IE48

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville, SC 29550

EFFLUENT AND WASTE DISPOSAL

ANNUAL REPORT

January 1, 2005 - December 31, 2005

PROGRESS ENERGY CAROLINAS

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

TABLE OF CONTENTS

Description ..... Page

I. EXECUTIVE SUMMARY 4

A. Discussion 4
B. Significant Variances 7
C. Regulatory Compliance 8

II. SUPPLEMENTAL INFORMATION 9

A. Regulatory Limits 9
B. Measurements and Approximations of Total Radioactivity 10
C. Estimated Total Errors 11

III. GASEOUS EFFLUENTS 12

A. Batch Releases 12
B. Abnormal Releases 12
C. Data Tables 12

IV. LIQUID EFFLUENTS 18

A. Batch Releases 18
B. Abnormal Releases 18
C. Data Tables 18

V. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS 24

A. Waste Class A 24
B. Waste Class B 26
C. Waste Class C 28

VI. 40 CFR 190 DOSE CONFORMANCE 30

VII. METEOROLOGICAL DATA 30

A. Continuous Release Diffusion Analysis 30

LIST OF TABLES

Table	Description	Page
Table III-A	Gaseous Effluents - Summation of All Releases	13
Table III-B	Gaseous Effluents - Ground Level and Mixed Mode Releases	15
Table III-C	Typical Lower Limits of Detection for Gaseous Effluents	17
Table IV-A	Liquid Effluents - Summation of All Releases	19
Table IV-B	Liquid Effluents - Continuous Mode and Batch Mode Releases	21
Table IV-C	Typical Lower Limits of Detection for Liquid Effluents	23
Table VII-A	Joint Occurrence Frequencies for LOWNDDEG and LOWNDSPD – Continuous Releases	31

I. EXECUTIVE SUMMARY

A. Discussion

1. Effluent Controls

The H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Offsite Dose Calculation Manual specifies controls and dose limits pertaining to releases of radioactivity to the environment. None of these controls or dose limits were exceeded during 2005.

2. Protection Standards

The main objective in the control of radiation is to ensure that any exposure is kept not only within regulatory limits, but As Low As Reasonably Achievable (ALARA). The ALARA concept applies to reducing radiation exposure both to workers at HBRSEP, Unit No. 2, and to the general public. "Reasonably achievable" means that radiation exposure reduction is based on sound environmental practices, economic decisions, and operating practices. By practicing ALARA, HBRSEP and Progress Energy Carolinas, Inc., minimize health risk and environmental detriment, and ensure that exposures are maintained well below regulatory limits.

3. Sources of Radioactivity Released

During normal operations of a nuclear power station, most of the fission products are retained within the fuel and fuel cladding. However, small quantities of radioactive fission and activation products are present in the reactor coolant water. The types of radioactive material released are noble gases, iodines and particulates, and tritium.

The noble gas fission products in the reactor coolant water are released as a gas when the coolant is depressurized. These gases are collected by a system designed for collection and storage for radioactive decay prior to release to the environment.

Small releases of radioactivity in liquids may occur from equipment associated with the reactor coolant system. These liquids are collected and processed for radioactivity removal, prior to and during release.

4. Noble Gas

Some of the fission products released in airborne effluents are radioactive isotopes of noble gases, such as krypton, argon, and xenon. Noble gases are by nature inert and do not concentrate in humans or other organisms. Noble gases contribute to human radiation exposure as external exposure.

5. Iodines and Particulates

There were no measurable releases of iodine during the year. Annual releases of particulates with half-lives greater than eight days were small. Factors such as chemical reactivity and solubility in water, combined with high processing efficiencies, minimize their discharge. The main contribution of radioactive iodine to human exposure is to the thyroid gland, where the body concentrates iodine. The particulates contribute to internal exposure of tissues such as the muscle, liver, and intestines. These particulates can also be a source of exposure if deposited on the ground.

6. Tritium

Tritium, a radioactive isotope of hydrogen, is the predominate radionuclide in liquid and gaseous effluents. Tritium is produced in the reactor via a number of processes. Tritium is a weak beta particle emitter and contributes very little radiation exposure to the human body, and when tritium is inhaled, ingested, or absorbed it is dispersed throughout the body until eliminated.

7. Processing and Monitoring

Effluents are strictly controlled and monitored to ensure that radioactivity released to the environment is minimal and within regulatory limits. Effluent controls include the operation of radiation monitoring systems, in-plant and environmental sampling and analyses, quality assurance programs for both in-plant and environmental sampling and analyses, and procedures that address effluent and environmental monitoring.

The plant radiation monitoring system provides monitors that are designed to ensure that all releases are below regulatory limits. Each instrument provides indication of the amount of radioactivity present and is equipped with alarms and indicators in the control room. The alarm setpoints are set below the regulatory limits, i.e., typically at less than 50 percent of the regulatory limit, to ensure that the limits are not exceeded. If a monitor alarms, a release to the environment from a tank is automatically suspended. Additionally, releases are sampled and analyzed in the laboratory prior to discharge to the environment. The sampling and analysis done in the laboratory provides a more sensitive and precise method of determining pre-effluent composition than in-plant monitoring instruments.

The plant has a meteorological tower, which is linked to computers that record the meteorological data. This meteorological data and the results of the Land Use Census are used to verify the ground level dispersion factors contained in the ODCM that are used in calculating the dose to the public.

In addition to in-plant equipment, the company maintains a Radiological Environmental Monitoring Program, which consists of devices used to sample the air and water in the environment. The samples collected from the surrounding environment are analyzed to determine the presence of radioactive material in the environment.

8. Exposure Pathways

Radiological exposure pathways are the methods by which people may become exposed to radioactive material. The major pathways of concern are those which could cause the highest calculated radiation dose. The projected pathways are determined from the type and amount of radioactive material that may have been released, the environmental transport mechanism, and the use of the environment.

Environmental transport mechanisms include, but are not limited to, hydrological (i.e., water) and meteorological (i.e., weather) characteristics of the area. Information on water flow, wind speed and direction, dietary intake of residents, recreational use of the area, and location of homes and farms in the area are some of the many factors used to calculate the potential exposure to offsite personnel.

The release of radioactive gaseous effluents includes pathways such as external whole body exposure, deposition on plants and soils, and human inhalation. The release of radioactive material in liquid effluents includes pathways such as fish consumption, and direct exposure from the lake at the shoreline and while swimming.

Even though radionuclides can reach humans by many different pathways, some radionuclides result in more exposure than others. The critical pathway is the one that, for a specific radionuclide, will result in the greatest exposure to a population, or a specific group of the population, called the critical group. The critical group may vary depending on the radionuclides involved, the age and diet of the group, and other cultural factors. The exposure may be received by the whole body or to a specific organ, with the organ receiving the largest fraction of the exposure called the critical organ.

The exposures to the general public in the area surrounding HBRSEP, Unit No. 2, are calculated for gaseous and liquid releases. The exposure due to radioactive material released in gaseous effluents is calculated using factors such as the amount of radioactive material released, the concentration beyond the site boundary, locations of exposure pathways, and usage factors. The exposures calculated due to radioactive materials released in liquid effluents are calculated using factors such as the total volume of liquid, the total volume of dilution water, field irrigation, and usage factors.

9. Results

The Radioactive Effluent Release Report is a detailed listing of the radioactivity released from the HBRSEP, Unit No. 2, during the period from January 1, 2005 through December 31, 2005.

During the period of January 1, 2005 through December 31, 2005, the estimated maximum individual offsite dose due to radioactivity released in effluents was:

Liquid Effluents:

- Total Body Dose 0.0000919 millirem
- Critical Organ Dose 0.0000957 millirem, Liver

Gaseous Effluents:

- Beta Air Dose 0.00355 millirad
- Gamma Air Dose 0.00972 millirad
- Critical Organ Dose 0.0739 millirem, Lung

B. Significant Variances

The following are explanations of significant variances in this Annual Report:

1. The 10 CFR 50, Appendix I, doses were calculated using the Canberra Effluent Management System (EMS[1]). The EMS Software provides day-by-day dose estimates that are conservative because all releases are assigned to the limiting receptor, using the continuous ground level dispersion factors calculated from 1978 meteorology.

2. HBRSEP, Unit No. 2, operated continuously throughout 2005 with the exception of the refueling shutdown from September 17, 2005 until October 25, 2005. Continued good fuel and reactor coolant system integrity kept gaseous and liquid effluent totals relatively low in 2005. Some of the gaseous and liquid release parameters for this reporting period are summarized below:

[1] EMS, Effluent Management System Software is a product of Canberra Nuclear Industries used for determining curies and dose released from routine radioactive effluent releases.

GASEOUS EFFLUENTS

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Fission & Act. Gas	Ci	2.95E-02	3.10E-02	3.68E-01	1.85E-02
I-131	Ci	< LLD	< LLD	< LLD	< LLD
Part. >8 Day Half-Lives	Ci	2.10E-08	5.05E-09	1.75E-07	< LLD
Tritium	Ci	1.33E+00	1.20E+00	1.25E+00	1.60E+00

LIQUID EFFLUENTS

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Fission & Act. Products	Ci	1.67E-03	1.69E-03	2.73E-03	2.38E-03
Tritium	Ci	4.01E+01	1.95E+02	2.69E+02	4.94E+01
Dilution Volume	Liters	2.79E+11	2.85E+11	2.54E+11	2.33E+11
Waste Volume	Liters	2.58E+05	4.81E+05	8.80E+05	7.39E+05

C. Regulatory Compliance

1. When projected on a day-by-day basis, utilizing conservative meteorological conditions, the dose commitment from gaseous and liquid effluents is a small fraction of the 10 CFR 50, Appendix I, limits. The direct radiation assessment to the most likely exposed member of the public is reported in the Annual Radiological Environmental Operating Report. During 2005, the results of the direct radiation assessment demonstrated no measurable effect above background for plant operations.

2. There were no changes to the waste solidification Process Control Program (PCP) during this reporting period. See page 35.

3. There were no changes to the Radioactive Waste Systems (i.e., liquid, gaseous, or solid) during this reporting period. See page 35.

4. There was one reportable instrumentation inoperability event during this reporting period. See page 35.

5. There were no outside liquid holdup tanks that exceeded the 10 curie limit during this reporting period. See page 35.

6. There were no Waste Gas Decay Tanks that exceeded the 1.9E+04 curie limit during this reporting period. See page 36.

7. There were three events where the required compensatory samples for radiation monitors being out of service were not properly obtained. See page 36.

8. There were two revisions to the ODCM during this reporting period. See page 34.

II. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. Fission and Activation Gases:

   10 CFR 20 Limits (Instantaneous Release Rate)
   - Total Body Dose ≤500 mrem/yr
   - Skin Dose ≤3000 mrem/yr

   10 CFR 50, Appendix I
   - For Calendar Quarter
     - Gamma Dose ≤5 mrad
     - Beta Dose ≤10 mrad
   - For Calendar Year
     - Gamma Dose ≤10 mrad
     - Beta Dose ≤20 mrad

2. Iodine-131 and 133, Tritium, and Particulates >8 day half-lives:

   10 CFR 20 Limits (Instantaneous Release Rate)
   - Dose from Inhalation (only) to a child to any organ ≤1500 mrem/yr

   10 CFR 50, Appendix I (Organ Doses)
   - For Calendar Quarter ≤7.5 mrem
   - For Calendar Year ≤15 mrem

3. Liquids:

   Concentrations are specified in 10 CFR 20, Appendix B, Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.00E-04 μCi/ml total activity.

   10 CFR 50, Appendix I
   - For Calendar Quarter
     - Total Body Dose ≤1.5 mrem
     - Any Organ Dose ≤5 mrem
   - For Calendar Year
     - Total Body Dose ≤3 mrem
     - Any Organ Dose ≤10 mrem

B. Measurements and Approximations of Total Radioactivity

1. Continuous Gaseous Releases

a) Fission and Activation Gases - The total activity released is determined from the net count rate of the gaseous monitor, its calibration factor, and the total exhaust flow. The activity of radioactive gas is determined by the fraction of that radioactive gas in the isotopic analysis for that period.

b) Iodines - The activity released as Iodine-131, 133, and 135 is based on isotopic analysis of the charcoal cartridge and particulate filter, and the total exhaust flow.

c) Particulates - The activity released via particulates with half-lives greater than eight days is determined by isotopic analysis of particulate filters and the total exhaust flow.

d) Tritium - The activity released as tritium is based on weekly grab sample analysis and total exhaust flow.

2. Batch Gaseous Releases

a) Fission and Activation Gases - The activity released is based on the volume released and the activity of the individual nuclides obtained from an isotopic analysis of the grab sample taken prior to the release.

b) Iodines - The iodines from mixed mode batch releases are included in the iodine determination from the mixed mode continuous Reactor Auxiliary Building release.

c) Particulates - The particulates from mixed mode batch releases are included in the particulate determination from the mixed mode continuous Reactor Auxiliary Building release.

d) Tritium - The activity released as tritium is based on the grab sample analysis of each batch and the batch volume.

3. Liquid Releases

a) Fission and Activation Products - The total release values (not including tritium, gases, and alpha) are comprised of the sum of the individual radionuclide activities in each release to the discharge canal for the respective quarter. These values represent the activity known to be present in the liquid radwaste effluent.

b) Tritium - The activity released as tritium is based on the grab sample analysis of each batch and the batch volume. For continuous releases, the activity released as tritium is based on analysis of a weekly composite sample. For continuous releases without a composite sampler, the tritium activity is based on analysis of daily grab samples.

c) Alpha - The measured alpha concentration in a monthly composite sample is used to calculate the total release and average diluted concentration during each period.

d) Strontium-89, 90, and Iron-55 - The total release values are measured quarterly from composite samples.

C. Estimated Total Errors

1. Estimated total errors for gaseous effluents are based on uncertainties in counting equipment calibration, counting statistics, exhaust flow rates, exhaust sample flow rates, non-steady release rates, chemical yield factors, and sample losses for such items as charcoal cartridges.

2. Estimated total errors for liquid effluents are based on uncertainties in counting equipment calibration, counting statistics, non-steady release flow rate, sampling and mixing losses, and volume determinations.

3. Estimated total errors for solid waste are based on uncertainties in equipment calibration, dose rate measurements, geometry, and volume determinations.

III. GASEOUS EFFLUENTS

A. Batch Releases

	Jan - June 2005	July - Dec 2005
Number of batch releases	51	42
Total time period for batch releases	9.32E+04 min	2.60E+04 min
Maximum time period for a batch release	1.05E+04 min	1.01E+04 min
Average time period for a batch release	1.83E+03 min	6.19E+02 min
Minimum time period for a batch release	2.30E+01 min	5.00E+00 min

B. Abnormal Releases

	Jan - June 2005	July - Dec 2005
Number of releases	0	0
Total activity released	0.00E+00 Ci	0.00E+00 Ci

C. Data Tables

The following tables provide the details of gaseous releases:

Table III-A Summation of All Releases
Table III-B Ground Level and Mixed Mode Releases
Table III-C Typical Lower Limits of Detection for Gaseous Effluents

TABLE III-A
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Gases				
1. Total release	Ci	2.95E-02	3.10E-02	3.63E+01
2. Average release rate for period	µCi/sec	3.79E-03	3.94E-03	
B. Iodines				
1. Total Iodine-131	Ci	< LLD	< LLD	1.74E+01
2. Average release rate for period	µCi/sec	< LLD	< LLD	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	2.10E-08	5.05E-09	1.05E+01
2. Average release rate for period	µCi/sec	2.70E-09	6.42E-10	
3. Gross alpha radioactivity	Ci	< LLD	< LLD	
D. Tritium				
1. Total release	Ci	1.33E+00	1.20E+00	2.31E+01
2. Average release rate for period	µCi/sec	1.71E-01	1.53E-01	
E. Percent of 10 CFR 50, Appendix I				
1. Quarterly limit				
Gamma air	%	1.40E-02	1.34E-02	
Beta air	%	2.47E-03	2.43E-03	
Organ: Lung	%	2.43E-01	2.20E-01	
2. Annual limit				
Gamma air	%	7.01E-03*	1.37E-02*	
Beta air	%	1.24E-03*	2.45E-03*	
Organ: Lung	%	1.21E-01*	2.32E-01*	

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE III-A
(Continued)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Gases				
1. Total release	Ci	3.68E-01	1.85E-02	3.63E+01
2. Average release rate for period	µCi/sec	4.64E-02	2.33E-03	
B. Iodines				
1. Total Iodine-131	Ci	< LLD	< LLD	1.74E+01
2. Average release rate for period	µCi/sec	< LLD	< LLD	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	1.75E-07	< LLD	1.05E+01
2. Average release rate for period	µCi/sec	2.20E-08	< LLD	
3. Gross alpha radioactivity	Ci	< LLD	< LLD	
D. Tritium				
1. Total release	Ci	1.25E+00	1.60E+00	2.31E+01
2. Average release rate for period	µCi/sec	1.57E-01	2.01E-01	
E. Percent of 10 CFR 50, Appendix I				
1. Quarterly limit				
Gamma air	%	1.59E-01	8.47E-03	
Beta air	%	2.91E-02	1.51E-03	
Organ: Lung	%	2.28E-01	2.93E-01	
2. Annual limit				
Gamma air	%	9.30E-02*	9.72E-02*	
Beta air	%	1.70E-02*	1.77E-02*	
Organ: Lung	%	3.46E-01*	4.92E-01*	

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE III-B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
GASEOUS EFFLUENTS - GROUND LEVEL AND MIXED MODE RELEASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
1. Fission Gases					
Ar-41	Ci	< LLD	< LLD	2.94E-02	2.80E-02
Xe-133	Ci	< LLD	< LLD	2.05E-05	2.93E-03
Total for Period	Ci	< LLD	< LLD	2.95E-02	3.10E-02
2. Iodines[1]					
I-131	Ci	< LLD	< LLD	< LLD	< LLD
I-133	Ci	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD
3. Particulates[1]					
Co-60	Ci	< LLD	< LLD	2.05E-08	4.54E-09
Cs-137	Ci	< LLD	< LLD	5.01E-10	5.09E-10
Total for Period	Ci	< LLD	< LLD	2.10E-08	5.05E-09

[1]Mixed mode continuous accountability includes mixed mode batch accountability (excludes tritium).

TABLE III-B
(Continued)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
GASEOUS EFFLUENTS - GROUND LEVEL AND MIXED MODE RELEASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
1. Fission Gases					
Ar-41	Ci	< LLD	< LLD	3.30E-01	1.77E-02
Kr-85m	Ci	< LLD	< LLD	8.26E-05	< LLD
Kr-88	Ci	< LLD	< LLD	1.83E-05	< LLD
Xe-133	Ci	< LLD	< LLD	2.94E-02	7.88E-04
Xe-133m	Ci	< LLD	< LLD	7.29E-04	< LLD
Xe-135	Ci	< LLD	< LLD	8.34E-03	< LLD
Total for Period	Ci	< LLD	< LLD	3.68E-01	1.85E-02
2. Iodines[1]					
I-131	Ci	< LLD	< LLD	< LLD	< LLD
I-133	Ci	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD
3. Particulates[1]					
Co-58	Ci	1.22E-07	< LLD	< LLD	< LLD
Co-60	Ci	< LLD	< LLD	3.73E-08	< LLD
Cs-137	Ci	< LLD	< LLD	1.53E-08	< LLD
Total for Period	Ci	1.22E-07	< LLD	5.27E-08	< LLD

[1]Mixed mode continuous accountability includes mixed mode batch accountability (excludes tritium).

TABLE III-C
TYPICAL LOWER LIMITS OF DETECTION FOR GASEOUS EFFLUENTS

Nuclide	LLD (μCi/cc)
H-3	3.15E-09
Ar-41	5.64E-08
Mn-54	2.14E-14
Co-58	3.05E-14
Fe-59	4.47E-14
Co-60	2.87E-14
Zn-65	6.71E-14
Br-82	3.28E-13
Kr-85	8.75E-06
Kr-85m	4.96E-08
Kr-87	1.19E-07
Kr-88	1.46E-07
Sr-89	2.57E-15
Sr-90	1.08E-15
Mo-99	7.77E-13
I-131	4.57E-14
Xe-131m	1.51E-06
I-133	2.00E-12
Xe-133	1.05E-07
Xe-133m	2.51E-07
Cs-134	1.47E-14
I-135	3.31E-11
Xe-135	2.82E-08
Xe-135m	6.79E-07
Cs-137	3.03E-14
Xe-138	2.25E-06
Ba-140	1.35E-13
La-140	3.30E-14
Ce-141	5.38E-14
Ce-144	2.03E-13
Gross Alpha	3.21E-15

IV. LIQUID EFFLUENTS

A. Batch Releases

	Jan - June 2005	July - Dec 2005
Number of batch releases	28	56
Total time period for batch releases	5.26E+03 min	1.12E+04 min
Maximum time period for a batch release	2.81E+02 min	4.50E+02 min
Average time period for a batch release	1.88E+02 min	2.00E+02 min
Minimum time period for a batch release	8.20E+01 min	1.40E+01 min
Average stream flow during release periods	5.71E+05 gpm	4.85E+05 gpm

B. Abnormal Releases

	Jan - June 2005	July - Dec 2005
Number of releases	0	0
Total activity released	0.00E+00 Ci	0.00E+00 Ci

C. Data Tables

The following tables provide the details of liquid releases:

Table IV-A Summation of All Releases
Table IV-B Continuous Mode and Batch Mode Releases
Table IV-C Typical Lower Limits of Detection for Liquid Effluents

TABLE IV-A
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	1.67E-03	1.69E-03	1.07E+01
2. Average diluted concentration during period	µCi/ml	6.01E-12	5.94E-12	
B. Tritium				
1. Total release	Ci	4.01E+01	1.95E+02	9.20E+00
2. Average diluted concentration during period	µCi/ml	1.44E-07	6.83E-07	
C. Dissolved and entrained gases				
1. Total release	Ci	< LLD	3.82E-04	9.60E+00
2. Average diluted concentration during period	µCi/ml	< LLD	1.34E-12	
3. Percent of applicable limit	%	< LLD	6.70E-07	
D. Gross alpha radioactivity				
1. Total release	Ci	< LLD	< LLD	1.83E+01
E. Volume of waste released prior to dilution	Liters	2.58E+05	4.81E+05	
F. Volume of dilution water used during period	Liters	2.79E+11	2.85E+11	
G. Percent of 10 CFR 50, Appendix I				
1. Quarterly Limit				
Organ: Liver	%	9.48E-05	4.94E-04	
Total body	%	2.63E-04	1.56E-03	
2. Annual Limit				
Organ: Liver	%	4.74E-05*	2.95E-04*	
Total body	%	1.31E-04*	9.09E-04*	

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE IV-A
(Continued)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	2.73E-03	2.38E-03	1.07E+01
2. Average diluted concentration during period	µCi/ml	1.08E-11	1.02E-11	
B. Tritium				
1. Total release	Ci	2.69E+02	4.94E+01	9.20E+00
2. Average diluted concentration during period	µCi/ml	1.06E-06	2.12E-07	
C. Dissolved and entrained gases				
1. Total release	Ci	5.14E-03	2.04E-04	9.60E+00
2. Average diluted concentration during period	µCi/ml	2.02E-11	8.78E-13	
3. Percent of applicable limit	%	1.01E-05	4.39E-07	
D. Gross alpha radioactivity				
1. Total release	Ci	< LLD	< LLD	1.83E+01
E. Volume of waste released prior to dilution	Liters	8.80E+05	7.39E+05	
F. Volume of dilution water used during period	Liters	2.54E+11	2.33E+11	
G. Percent of 10 CFR 50, Appendix I				
1. Quarterly Limit				
Organ: Liver	%	1.19E-03	N/A	
Organ: GI-LLI	%	N/A	1.51E-04	
Total body	%	3.86E-03	4.47E-04	
2. Annual Limit				
Organ: Liver	%	8.90E-04*	9.57E-04*	
Total body	%	2.84E-03*	3.06E-03*	

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE IV-B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
LIQUID EFFLUENTS - CONTINUOUS MODE AND BATCH MODE RELEASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
H-3	Ci	< LLD	< LLD	4.01E+01	1.95E+02
Mn-54	Ci	< LLD	< LLD	1.36E-05	< LLD
Fe-55	Ci	< LLD	< LLD	3.86E-04	1.23E-04
Co-57	Ci	< LLD	< LLD	5.05E-06	9.31E-07
Co-58	Ci	< LLD	< LLD	1.37E-04	2.92E-05
Co-60	Ci	< LLD	< LLD	9.58E-04	7.51E-04
Sb-125	Ci	< LLD	< LLD	1.39E-04	7.62E-04
Cs-137	Ci	< LLD	< LLD	3.65E-05	2.46E-05
Total for Period	Ci	< LLD	< LLD	1.67E-03	1.69E-03
Xe-133	Ci	< LLD	< LLD	< LLD	3.82E-04
Total for Period	Ci	< LLD	< LLD	< LLD	3.82E-04

TABLE IV-B
(Continued)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2005
LIQUID EFFLUENTS - CONTINUOUS MODE AND BATCH MODE RELEASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
H-3	Ci	< LLD	< LLD	2.69E+02	4.94E+01
Cr-51	Ci	< LLD	< LLD	< LLD	6.92E-04
Fe-55	Ci	< LLD	< LLD	2.20E-11	1.49E-04
Co-58	Ci	< LLD	< LLD	4.17E-06	4.94E-05
Co-60	Ci	< LLD	< LLD	3.63E-04	1.39E-04
Ag-110m	Ci	< LLD	< LLD	< LLD	2.26E-05
Te-123m	Ci	< LLD	< LLD	< LLD	1.94E-05
Sb-124	Ci	< LLD	< LLD	< LLD	2.35E-04
Sb-125	Ci	< LLD	< LLD	2.35E-03	1.08E-03
Cs-137	Ci	< LLD	< LLD	1.14E-05	< LLD
Ce-141	Ci	< LLD	< LLD	< LLD	3.85E-06
Total for Period	Ci	< LLD	< LLD	2.73E-03	2.38E-03
Xe-133	Ci	< LLD	< LLD	5.11E-03	2.04E-04
Xe-133m	Ci	< LLD	< LLD	2.50E-05	< LLD
Xe-135	Ci	< LLD	< LLD	9.58E-07	< LLD
Total for Period	Ci	< LLD	< LLD	5.14E-03	2.04E-04

TABLE IV-C
TYPICAL LOWER LIMITS OF DETECTION FOR LIQUID EFFLUENTS

Nuclide	LLD (μCi/ml)
H-3	4.43E-06
Cr-51	3.27E-07
Mn-54	3.07E-08
Fe-55	6.84E-08
Co-57	5.31E-08
Co-58	4.29E-08
Fe-59	5.70E-08
Co-60	3.73E-08
Zn-65	8.98E-08
Sr-89	3.10E-08
Sr-90	1.24E-08
Nb-95	3.20E-08
Zr-95	7.71E-08
Mo-99	4.22E-07
Tc-99m	6.30E-08
Ag-110m	2.88E-08
Sn-113	5.39E-08
Sb-122	6.54E-08
Te-123m	4.51E-08
Sb-124	6.59E-08
Sb-125	1.03E-07
Xe-127	1.06E-06
I-131	4.20E-08
Xe-131m	2.26E-06
Te-132	5.57E-08
Xe-133	1.79E-07
Xe-133m	4.65E-07
Cs-134	2.27E-08
Xe-135	2.21E-07
Cs-137	4.61E-08
Ba-140	1.71E-07
La-140	3.38E-08
Ce-141	9.27E-08
Ce-144	3.85E-07
Gross Alpha	5.92E-08

V. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
Report Time Period: January 1, 2005, through December 31, 2005

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (not irradiated fuel)

Waste Class A

1.	Type of Waste	Unit	Period Total	Est. Total Error (%)	Solid. Agent	Cont. Type	Form	No. Ship.
a)	Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
b)	Dry compressible waste, contaminated equipment, etc.	m^3 Ci	5.18E+02 7.09E+00	1.00E+00 2.07E+01	N/A	STP	Normal	8
c)	Irradiated components, control rods, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
d)	Other: Soil, Concrete, Oil, and Ethylene Glycol	m^3 Ci	1.10E+02 2.52E-01	1.00E+00 2.07E+01	N/A	STP	Normal	7

STP = Strong Tight Package

V. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
Report Time Period: January 1, 2005, through December 31, 2005

B. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (not irradiated fuel)

Waste Class B

1.	Type of Waste	Unit	Period Total	Est. Total Error (%)	Solid. Agent	Cont. Type	Form	No. Ship.
a)	Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	5.53E+00 3.45E+01	1.00E+00 2.07E+01	N/A	HIC	Normal	1
b)	Dry compressible waste, contaminated equipment, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
c)	Irradiated components, control rods, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
d)	Other:	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A

HIC = High Integrity Container

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

		%	Ci
a.	Ni-63	6.55E+01	2.26E+01
	Co-60	1.14E+01	3.92E+00
	Co-58	9.80E+00	3.38E+00
	Fe-55	9.33E+00	3.22E+00
	Sb-125	1.19E+00	4.10E-01
	Co-57	6.67E-01	2.30E-01
	Ag-110m	6.32E-01	2.18E-01
	Mn-54	5.97E-01	2.06E-01
	Cs-137	4.58E-01	1.58E-01
	Ce-144	2.34E-01	8.08E-02
	C-14	1.62E-01	5.59E-02
	Sr-90	3.30E-02	1.14E-02
	Others*	8.90E-03	3.07E-03
b.	N/A	N/A	N/A
c.	N/A	N/A	N/A
d.	N/A	N/A	N/A

* Others include: H-3, Tc-99, I-129, Pu-238, Pu-239, Am-241, Pu-241, Cm-242, Cm-243

3. Solid Waste Disposition

Number of Shipments: 1
Mode of Transportation: Exclusive Use - Highway
Destination: Barnwell

V. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
Report Time Period: January 1, 2005, through December 31, 2005

C. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (not irradiated fuel)

Waste Class C

1.	Type of Waste	Unit	Period Total	Est. Total Error (%)	Solid. Agent	Cont. Type	Form	No. Ship.
a)	Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	3.85E+00 1.01E+01	1.00E+00 2.07E+01	N/A	HIC	Normal	1
b)	Dry compressible waste, contaminated equipment, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
c)	Irradiated components, control rods, etc.	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A
d)	Other:	m^3 Ci	N/A	N/A	N/A	N/A	N/A	N/A

HIC = High Integrity Container

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

		%	Ci
a.	Fe-55	4.39E+01	4.44E+00
	Co-60	3.57E+01	3.61E+00
	C-14	7.60E+00	7.69E-01
	Ni-63	6.22E+00	6.30E-01
	Nb-95	2.10E+00	2.12E-01
	Zr-95	1.43E+00	1.45E-01
	Sb-125	9.48E-01	9.59E-02
	Co-58	7.70E-01	7.79E-02
	Ag-110m	4.48E-01	4.54E-02
	Sn-113	3.51E-01	3.55E-02
	Ce-144	1.98E-01	2.01E-02
	Mn-54	1.51E-01	1.53E-02
	Others*	2.25E-01	2.27E-02
b.	N/A	N/A	N/A
c.	N/A	N/A	N/A
d.	N/A	N/A	N/A

3. Solid Waste Disposition

Number of Shipments: 1
Mode of Transportation: Exclusive Use - Highway
Destination: Barnwell

* Others include: H-3, Cr-51, Co-57, Sr-90, Tc-99, Ag-108m, Te-123m, Sb-124, I-129, Cs-137, Pu-238, Pu-239, Pu-241, Am-241, Cm-242, Cm-243

Total Curie Quantity and Principle Radionuclides were determined by estimate.

VI. 40 CFR 190 DOSE CONFORMANCE

The direct radiation assessment to the most likely exposed member of the public is reported in the Annual Radiological Environmental Operating Report. The results of the assessment demonstrate no measurable affect above background from plant operations. Since no 10 CFR 50, Appendix I, limits have been exceeded and the evaluation of the Independent Spent Fuel Storage Installations indicate only a small fraction of the total dose to the environs, this demonstrates conformance with 40 CFR 190, "Environmental Radiation Protection Standards for Nuclear Power Operation."

VII. METEOROLOGICAL DATA

A. Continuous Release Diffusion Analysis

Table VII-A presents the number and frequency of wind direction occurrences by wind speed class as recorded at the onsite meteorological system during continuous release, for the period January 1, 2005, through December 31, 2005.

The frequencies are presented as a percent of total occurrences for each stability class, as well as a summary for all classes for the lower (11 meter) sensor elevation.

Pertinent information available from the tables is as follows:

1. Stability

Percent occurrence Pasquill Stability categories based on lower level (11 meter) wind distribution:

A	B	C	D	E	F	G
4.19	5.81	7.89	44.32	19.97	8.75	9.07

2. Wind Speed — 11 Meter

Average Speed (mph)	4.26
Percent Calm	7.98
Percent Less than 3.5 mph	48.25

3. Wind Direction — 11 Meter

Prevailing	N
Percent Occurrence	11.1

TABLE VII-A JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD - CONTINUOUS RELEASES

Atmospheric Stability Class A

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.56	0.01	0.01	0.00	0.03	0.05	0.08	0.05	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.26
3.35	0.16	0.13	0.16	0.14	0.14	0.11	0.15	0.15	0.08	0.19	0.48	0.28	0.19	0.16	0.02	0.05	2.61
5.59	0.27	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.22	0.07	0.12	0.05	0.12	0.15	0.06	0.11	1.20
8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.13
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.45	0.14	0.18	0.19	0.19	0.19	0.20	0.16	0.41	0.26	0.61	0.33	0.32	0.32	0.09	0.16	4.19

Atmospheric Stability Class B

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.56	0.00	0.03	0.07	0.16	0.15	0.13	0.12	0.03	0.00	0.07	0.06	0.06	0.03	0.05	0.00	0.00	0.97
3.35	0.42	0.28	0.35	0.18	0.12	0.07	0.16	0.21	0.19	0.40	0.42	0.35	0.26	0.18	0.11	0.08	3.78
5.59	0.36	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.00	0.01	0.06	0.06	0.13	0.12	0.11	0.96
8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.08
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.79	0.34	0.42	0.34	0.27	0.20	0.28	0.26	0.30	0.47	0.49	0.47	0.35	0.38	0.22	0.22	5.81

Atmospheric Stability Class C

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.56	0.06	0.09	0.16	0.26	0.22	0.30	0.21	0.06	0.03	0.13	0.20	0.08	0.13	0.09	0.03	0.02	2.10
3.35	0.70	0.66	0.25	0.27	0.07	0.06	0.18	0.35	0.33	0.45	0.45	0.20	0.19	0.33	0.14	0.18	4.79
5.59	0.28	0.09	0.01	0.00	0.00	0.00	0.00	0.01	0.07	0.06	0.02	0.05	0.06	0.06	0.05	0.11	0.87
8.27	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.09
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.06	0.85	0.42	0.53	0.29	0.36	0.39	0.42	0.45	0.63	0.67	0.33	0.38	0.48	0.25	0.39	7.89

Atmospheric Stability Class D

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.01	0.04	0.05	0.05	0.03	0.02	0.03	0.03	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.36
1.56	0.68	1.60	2.13	2.32	1.46	0.97	1.19	1.10	0.65	0.93	0.92	0.59	0.48	0.42	0.27	0.19	15.89
3.35	4.63	4.29	1.59	0.92	0.34	0.08	0.32	2.48	1.67	1.53	0.97	0.57	0.35	0.62	0.51	1.06	21.91
5.59	1.70	0.59	0.01	0.02	0.00	0.00	0.00	0.24	0.73	0.32	0.20	0.03	0.09	0.12	0.30	1.12	5.47
8.27	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.02	0.06	0.38	0.67
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.05	6.51	3.77	3.32	1.83	1.08	1.53	3.84	3.27	2.79	2.11	1.21	0.94	1.19	1.15	2.74	44.32

Atmospheric Stability Class E

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.06	0.08	0.10	0.05	0.01	0.01	0.02	0.09	0.21	0.24	0.14	0.09	0.07	0.07	0.03	0.06	1.33
1.56	0.55	0.65	0.82	0.45	0.06	0.12	0.18	0.74	1.78	2.01	1.19	0.76	0.63	0.56	0.26	0.52	11.27
3.35	0.53	0.08	0.05	0.02	0.00	0.00	0.02	0.61	1.09	0.99	0.36	0.13	0.20	0.43	0.67	1.29	6.48
5.59	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.11	0.01	0.00	0.00	0.01	0.02	0.08	0.48	0.83
8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.20	0.82	0.97	0.52	0.07	0.13	0.22	1.48	3.22	3.24	1.69	0.98	0.92	1.09	1.04	2.37	19.97

Atmospheric Stability Class F

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.08	0.05	0.03	0.00	0.00	0.00	0.05	0.21	0.18	0.19	0.21	0.17	0.09	0.12	0.25	0.20	1.82
1.56	0.24	0.14	0.11	0.00	0.00	0.01	0.14	0.63	0.54	0.60	0.66	0.52	0.29	0.36	0.78	0.61	5.62
3.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.03	0.00	0.00	0.01	0.03	0.24	0.89	1.30
5.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.31	0.19	0.14	0.00	0.00	0.02	0.19	0.87	0.77	0.83	0.87	0.68	0.40	0.52	1.26	1.70	8.75

Atmospheric Stability Class G

Max (M/S)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0.34	0.13	0.05	0.00	0.01	0.03	0.04	0.25	0.38	0.43	0.23	0.16	0.15	0.10	0.24	1.08	1.19	4.47
1.56	0.12	0.05	0.00	0.01	0.02	0.03	0.24	0.35	0.40	0.21	0.15	0.14	0.09	0.22	1.00	1.10	4.15
3.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.06	0.36	0.45
5.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.24	0.10	0.00	0.02	0.05	0.07	0.49	0.73	0.84	0.44	0.32	0.29	0.19	0.48	2.13	2.66	9.07

Frequency	11.10	8.93	5.90	4.92	2.70	2.05	3.30	7.78	9.26	8.67	6.76	4.30	3.50	4.45	6.14	10.25	100.00

ADDENDUM 1

CHANGES TO ODCM, PCP, AND RADIOACTIVE WASTE SYSTEMS

TABLE OF CONTENTS

Description ..... Page

I. Changes to the Offsite Dose Calculation Manual (ODCM) 34
II. Changes to the Radioactive Waste Systems 35
III. Changes to the Process Control Program (PCP) 35
IV. Changes to the Land Use Census 35
V. Instrument Inoperability 35
VI. Liquid Holdup Tank Curie Limit 35
VII. Waste Gas Decay Tank Curie Limit 36
VIII. Missed Compensatory Samples 36

I. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

There were two revisions to the ODCM during this reporting period. Summaries of the revisions are shown below. A complete copy of the updated ODCM is being submitted in a separate letter.

ODCM, Revision 26
Description of Changes

There were several changes made to the ODCM in Revision 26. These changes were in support of the new 24P-ISFSI module that was installed. These changes include:

1) Revised description for sample point 56 on Table 4.5-1 & footnote 10 on Table 4.5-1 to add "7P" to the ISFSI in order to distinguish the present ISFSI structure licensed under SNM-2502 from the new 24P-ISFSI under CoC No. 1004.

2) Added two new TLDs (sample points 61 & 65) to Table 4.5-1 which will be used to monitor the 24P-ISFSI.

3) Added a new footnote (11) to Table 4.5-1 which denotes that the referenced sample is required for monitoring of the 24P-ISFSI.

4) Added footnote 11 to TLD sample points 2, 6, 56, 61, and 65 on Table 4.5-1. This addition will designate the environmental TLDs that will be used for monitoring direct radiation from the 24P-ISFSI as required by 10 CFR 72.126(c)(2).

5) Modified Figure 4-1, "Radiological Sample Locations Near Site," as follows:
   a. Modified railroad track layout to reflect recent changes to the track.
   b. Added sample point 65.
   c. Moved sample points 2, 56, and 61 to more accurately reflect the true sample points.
   d. Added sample points 61 & 65 to the TLD samples on the table below the map.
   e. Removed redundant statement regarding which sample points have TLDs and air samplers. This information is already available in the table below the map.
   f. Added 24P-ISFSI module to the map.

6) Modified Figure 4-2, "Radiological Sample Distant Locations," as follows:
   a. Added sample points 61 & 65 to the TLD samples on the table below the map.
   b. Added sample location 65 to the list of samples not shown on the map due to the map scale.
   c. Removed redundant statement regarding which sample points have TLDs and air samplers. This information is already available in the table below the map.

ODCM, Revision 27
Description of Changes

1) Several changes were made to the ODCM following the replacement of the plant vent stack radiation monitor, R-14. The new R-14 eliminated channels A & B, which were originally used to monitor for particulates and iodine. Sections 3.7 & 3.8 detailing the methodologies to determine the alarm setpoints of R-14A & R14B were deleted. Additionally, the surveillance requirements associated with these channels have been deleted from Table 3.11-1, Item 1.a & 1.b (Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements).

2) Added descriptive sample points to Table 3.12-1 (Radioactive Gaseous Waste Sampling and Analysis Program) further detailing the gaseous effluent monitoring program that is currently in place.

3) Deleted Note i from Table 3.12-1 (Radioactive Gaseous Waste Sampling and Analysis Program). This note required the daily sampling for plant vent particulate and iodine if particulate and iodine levels exceed 10% of the limits in Section 3.2.1. This requirement is not contained in Generic Letter 89-01, NUREG-1301, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors."

4) Deleted reference to the condenser vacuum pump radiation monitor (R-15) in reference to its use in monitoring for a primary-to-secondary leak. This is a primary-to-secondary leak programmatic statement which does not need to be included in this document.

II. CHANGES TO THE RADIOACTIVE WASTE SYSTEMS

There were no changes to the Radioactive Waste Systems during this reporting period.

III. CHANGES TO THE PROCESS CONTROL PROGRAM (PCP)

There were no changes to the Process Control Program during this reporting period.

IV. CHANGES TO THE LAND USE CENSUS

The Land Use Census is performed every 24 months and was last performed in 2004. The results of the 2004 Land Use Census and average meteorological data for the last 10 years identified no changes that require an ODCM change. The next Land Use Census will be performed in 2006.

V. INSTRUMENT INOPERABILITY

Due to a discrepancy in hydrogen readings between a grab sample and the waste gas analyzer, the waste gas analyzer was removed from service on November 21, 2005, at 1446 hours. TRM 3.11, Item A.2, requires the return of the waste gas analyzer to service within 14 days. Contrary to this requirement, due to continuing problems with the gas analyzer and failure to adequately communicate its out of service time, the waste gas analyzer was not returned to service until January 20, 2006, at 1352 hours. This event was investigated under Corrective Action Program Nuclear Condition Report (NCR) 177865.

VI. LIQUID HOLDUP TANK CURIE LIMIT

There were no outside liquid holdup tanks that exceeded the ten curie limit during this reporting period.

VII. WASTE GAS DECAY TANK CURIE LIMIT

There were no waste gas decay tanks with a curie content that exceeded the 1.90E+04 curie limit during this reporting period.

VIII. MISSED COMPENSATORY SAMPLES

In 2005, there were three instances when compensatory sampling as required by the ODCM was not performed. These three events were investigated under Significant Adverse NCR 177293.

1) On November 2, 2005 at 2020 hours, the Condensate Polisher Liquid Waste Monitor (R-37) flow monitor was declared out of service and Work Request 215389 was initiated. Due to a lack of training and procedure guidance, it was not recognized that inoperability of the flow monitor results in the R-37 monitor also becoming inoperable. Consequently, the required compensatory grab sampling of ODCM 2.6, Table 2.6-1, Item 7, was not performed until November 5, 2005, at 0227 hours, when it was recognized that R-37 had become inoperable.

2) On November 17, 2005 at 0910 hours, a compensatory grab sample for the plant vent stack radiation monitor (R-14) was obtained 12 hours and 10 minutes after the previous sample. This does not meet the required frequency of ODCM Table 3.10-1, Item 1.b, which requires that samples be collected at least once per 12 hours.

3) On November 28, 2005, the required compensatory sampling for the Fuel Handling Building Lower Level Exhaust radiation monitor (R-20) being out of service was not performed as required by Table 3.10-1, Item 3.a. A failure of a detector in the count room resulted in an invalid spectrum on the sample collected at 0744 hours on November 28, 2005. As a result, the time between valid samples was 13 hours and 2 minutes. This exceeds the ODCM requirement for samples collected every 12 hours, and analyzed within 24 hours.

ADDENDUM 2

CORRECTIONS TO PREVIOUS REPORTS

TABLE OF CONTENTS

	Description	Page
I.	DISCUSSION	38

I. DISCUSSION

There is one correction to the 2004 Annual Radioactive Effluent Report. Table IV-B (page 22) of the report had incorrect totals for the 3rd and 4th quarters Batch Mode fission and activation products columns. This event was investigated under Adverse NCR 170396. The corrected table is shown as follows:

TABLE IV-B
(Continued)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 2004
LIQUID EFFLUENTS - CONTINUOUS MODE AND BATCH MODE RELEASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
H-3	Ci	< LLD	< LLD	2.39E+00	7.56E+01
Fe-55	Ci	< LLD	< LLD	2.64E-05	1.36E-12
Co-58	Ci	< LLD	< LLD	4.02E-05	3.87E-05
Co-60	Ci	< LLD	< LLD	6.01E-04	3.04E-04
Ag-110m	Ci	< LLD	< LLD	< LLD	4.32E-06
Sb-124	Ci	< LLD	< LLD	5.00E-04	1.70E-05
Sb-125	Ci	< LLD	< LLD	2.04E-03	1.98E-04
Cs-137	Ci	< LLD	< LLD	2.20E-06	9.05E-06
Total for Period	Ci	< LLD	< LLD	3.21E-03	5.71E-04
Xe-133	Ci	< LLD	< LLD	< LLD	8.98E-05
Xe-135	Ci	< LLD	< LLD	< LLD	3.07E-06
Total for Period	Ci	< LLD	< LLD	< LLD	9.28E-05