

Grand Gulf Nuclear Station

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

July 1 - December 31, 1983

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I. INTRODUCTION

This Semiannual Radioactive Effluent Release Report for the period of July 1 to December 31, 1983, is submitted in accordance with Section 6.9.1.8 of Appendix A to Grand Gulf Nuclear Station (GGNS) License No. NPF-13. That portion of Appendix A that refers to the monitoring of radioactive effluents, Sections 3/4-11 and 3/4-12, will hereafter be referred to as the Radiological Environmental Technical Specifications (RETS).

Airborne discharges at GGNS are ground level releases. All liquid and airborne discharges to the environment were analyzed in accordance with the RETS requirements, with the exception of the Standby Service Water (SSW) System discharge identified in Section II.F.1. Also, all effluent releases were within the concentration and total release limits specified by the RETS.

There were several instances when Station Operations personnel were unable to restore operable status to radioactive effluent monitoring instrumentation. Additional discussion (Section II.K) has been provided to explain why these inoperabilities were not corrected within the time specified by GGNS Technical Specifications.

The calculations and terms utilized in this report are defined in the GGNS Offsite Dose Calculation Manual (ODCM).

II. DETAILED INFORMATION

A. Regulatory Limits

1. 10CFR20 Limits

- a. Fission and Activation Gases - The release rate limit at any time for noble gases to areas at or beyond the site boundary shall be such that

D_{tb} = average total body dose rate in the current year (mrem/yr)

$$= \overline{X/Q} \sum_i K_i \overline{O}_i \leq 500 \text{ mrem/yr and}$$

D_s = average skin dose rate in the current year (mrem/yr)

$$= \overline{X/Q} \sum_i (L_i + 1.1 M_i) \overline{O}_i \leq 3000 \text{ mrem/yr}$$

where the terms are defined in the GGNS ODCM.

- b. Iodines and Particulates - The release rate limit for the sampling period for all radioiodines, tritium and radioactive materials in particulate form with half-lives greater than 8 days shall be such that

D = average organ dose rate in current year (mrem/yr)

$$= \sum_i W_i P_i \overline{O}'_i \leq 1500 \text{ mrem/yr}$$

where the terms are defined in the GGNS ODCM.

- c. Liquid Effluents - The concentration of radioactive materials released in liquid effluents to unrestricted areas from all reactors at the site shall not exceed at any time the values specified in 10CFR20, Appendix B, Table II, Column 2. The concentration of dissolved or entrained noble gases, released in liquid effluents to unrestricted areas from all reactors at the site, shall be limited to 2×10^{-4} microcuries/ml total activity.

2. 10CFR50, Appendix I Limits

- a. Fission and Activation Gases - The dose from noble gases in gaseous effluents to areas at or beyond the site boundary shall be such that:

$$D_{\gamma} = \text{air dose due to gamma emissions from noble gases}$$

$$= 3.17 \times 10^{-8} \sum_i M_i \overline{X/Q} \tilde{O}_i \leq 5 \text{ mRad } \gamma/\text{qtr}$$

$$\leq 10 \text{ mRad } \gamma/\text{yr}$$

$$D_{\beta} = \text{air dose due to beta emissions from noble gas}$$

$$= 3.17 \times 10^{-8} \sum_i N_i \overline{X/Q} \tilde{O}_i \leq 10 \text{ mRad } \beta/\text{qtr}$$

$$\leq 20 \text{ mRad } \beta/\text{yr}$$

where the terms are defined in the GGNS ODCM.

- b. Radioiodines and Particulates - The dose from tritium, radioiodines and radioactive material in particulate form with half-lives greater than 8 days in gaseous effluents shall be such that

$$D_p = \text{dose to an individual from radioiodines and radionuclides in particulate form with half-lives greater than 8 days (mrem)}$$

$$= 3.17 \times 10^{-8} \sum_i R_i W' \tilde{O}_i \leq 7.5 \text{ mrem/qtr Any Organ}$$

$$\leq 15 \text{ mrem/yr Any Organ}$$

where the terms are defined in the GGNS ODCM.

- c. Liquid Effluents - The dose from radioactive materials in liquid effluents shall be such that

$$D_{\text{Tau}} = \sum_i \left[A_i \text{ Tau}_{i-1}^m \Delta t_i C_{il} F_l \right]$$

$$\leq 1.5 \text{ mrem/qtr Total Body}$$

$$\leq 5 \text{ mrem/qtr Any Organ}$$

$$\leq 3 \text{ mrem/yr Total Body}$$

$$\leq 10 \text{ mrem/yr Any Organ}$$

where the terms are defined in the GGNS ODCM.

3. 40CFR190 Limits

Doses are calculated for Fission and Activation Gases; Iodines and Particulates; and Liquid Effluents according to equations contained in Sections 2-a., 2.b, and 2.c., respectively, with the exception that the limits applied are

≤ 25 mRem/yr, Total Body and Any Organ except thyroid

≤ 75 mRem/yr, Thyroid

≤ 10 mRad γ /qtr or ≤ 20 mRad γ /yr, Fission and Activation Gases

≤ 20 mRad β /qtr or ≤ 40 mRad β /yr, Fission and Activation Gases

≤ 15 mRem/qtr or ≤ 30 mRem/yr Any Organ, Iodine and Particulates

≤ 3 mRem/qtr or ≤ 6 mRem/yr Total Body, Liquid Effluents

≤ 5 mRem/qtr or ≤ 20 mRem/yr Any Organ, Liquid Effluents

B. Maximum Permissible Concentrations

1. Airborne

The Maximum Permissible Concentration (MPC) of radioactive materials in gaseous effluents is limited by the dose rate restrictions of 10CFR20. In this case, the maximum permissible concentrations are actually determined by the dose factors in Table 2.1-1 of the GGNS ODCM.

2. Liquid

The MPC of radioactive materials in liquid effluents is limited by 10CFR20, Appendix B, Table II, Column 2. The MPC chosen is the most conservative value of either the soluble or insoluble MPC for each radioisotope.

C. Average Energy

Not Applicable for GGNS RETS.

D. Measurements and Approximations of Total Activity

The following discussion details the methods used to measure and approximate total activity for the following:

1. Fission and Activation Gases
2. Iodines
3. Particulates
4. Liquid Effluents

Tables 5 and 6 give sampling frequencies and minimum detectable sensitivity requirements for the analysis of liquid and gaseous effluent streams.

Values in the attached tables given as zero do not necessarily infer that the radionuclides were not present. A zero indicates that the radionuclide was not present at levels greater than the sensitivity requirements shown in Tables 5 and 6. For some radionuclides lower detection limits than required may be readily achievable; when a radionuclide is measured below its stated limits it is reported.

1. For Fission and Activation Gases

The following noble gases are considered in evaluating gaseous airborne discharges

Ar-41	Xe-131m
Kr-85m	Xe-133
Kr-85	Xe-133m
Kr-87	Xe-135m
Kr-88	Xe-135
Kr-89	Xe-137
	Xe-138.

Periodic grab samples from Station effluent streams are analyzed by a computerized pulse height analyzer system utilizing high resolution germanium detectors. (See Table 6 for sampling and analytical requirements.) Isotopic values thus obtained are used for dose release rate calculations as given in Section II.A.1. of this report. Only those radionuclides that are detected are used in this computation. During the period between grab samples, the amount of radioactivity released is based on the effluent monitor readings. Monitors are assigned a calibration factor based upon the last isotopic analysis using the following relationship:

where

- C = isotopic calibration factor for isotope i.
- m = concentration of isotope i in the grab sample, in Ci/ml.
- m = net monitor reading associated with the effluent stream. (Determined at the time of grab sampling)

These calibration factors, along with the hourly effluent monitor values and flow rates, are entered into the laboratory computer where the release rates for individual radionuclides are calculated and stored. If no activity is detected in the grab sample, the calibration factor for Kr-85 and the dose factor for Kr-89 are entered into the laboratory computer.

2. For Particulates and Radioiodines

The radioiodines and radioactive materials in particulate form to be considered are

Zn-65	I-133
Cr-51	Cs-134
Mn-54	Cs-136
Fe-59	Cs-137
Co-58	Ba-140
Co-60	Ce-141
Sr-89	Other Nuclides
Sr-90	with half-lives
Zr-95	greater than
Sb-124	8 days.
I-131	

3. For Continuous Releases

Continuous sampling is performed on the continuous release points (i.e., Radwaste Vent, Containment Purge, FHA Vent, Turbine Building Vent). Particulate material is collected by filtration. Radioiodines are collected by adsorption onto a charcoal filter. Periodically these filters are removed and analyzed on the pulse height analyzer to identify and quantify radioactive materials collected on the filters. Particulate filters are then analyzed for gross alpha and Strontium-89 and -90, as required. Gross alpha determinations are made using a 2-pi gas flow proportional counter. Strontium-89 and -90 values are obtained by chemical separation and subsequent analysis using 2-pi gas flow proportional counters. During major operational occurrences, the frequency of sampling is increased to satisfy the requirements of footnote "C" of Table 6, "Radioactive Gaseous Waste, Sampling and Analysis," (GGNS RETS, Table 4.11.2.1.2-1).

4. For Batch Releases: Gases

The processing of batch type releases (from Containment Purge) is analogous to that for continuous releases.

5. For Batch Releases: Liquid Effluents

The radionuclides listed below are considered when evaluating liquid effluents:

H-3	Mo-99
Co-58	Tc-99m
Co-60	I-131
Fe-55	I-132
Fe-59	I-133
Zn-65	I-135
Mn-54	Cs-134
Cr-51	Cs-137
Sr-89	Ba-140
Sr-90	La-140
Nh-95	Ce-141
Zr-95	Ce-144.

Representative pre-release grab samples are obtained and analyzed as required by Table 5. Isotopic analyses are performed using the computerized pulse height analyses system previously described. Aliquots of each pre-release sample, proportional to the waste volume released, are composited in accordance with the requirements of Table 5. Strontium determinations are made by performing a chemical separation and counting the separated strontium using a 2-pi gas flow proportional counter. Gross alpha determinations are made using 2-pi gas flow proportional counters. Tritium and Iron-55 concentrations are determined by using liquid scintillation techniques. Dissolved gases are determined employing grab sampling techniques and then counting on the pulse height analyzer system.

E. Batch Releases

1. Liquid

3rd Quarter 1983

- a. Number of batch releases: 114
- b. Total time period for batch releases: 44499 minutes
- c. Maximum time period for a batch release: 634 minutes
- d. Average time period for batch releases: 390 minutes
- e. Minimum time period for a batch releases: 238 minutes

4th Quarter 1983

- a. Number of batch releases: 77
- b. Total time period for batch releases: 25715 minutes
- c. Maximum time period for a batch release: 420 minutes
- d. Average time period for batch releases: 334 minutes
- e. Minimum time period for a batch release: 40 minutes

2. Gaseous

3rd and 4th Quarter 1983

- a. Number of batch releases: None
- b. Total time period for batch releases: 0 hours
- c. Maximum time period for a batch release: 0 hours
- d. Average time period for a batch release: 0 hours
- e. Minimum time period for a batch release: 0 hours

F. Abnormal Releases

1. Liquid

- a. Number of releases: 1

(This was an unmonitored release of SSW resulting from a failure of an isolation valve to close.)

- b. Total activity released: 0 uCi/ml

2. Gaseous

- a. Number of releases: None
- b. Total activity released: N/A

G. Estimate of Total Error

1. Liquid

The maximum errors associated with sampling, laboratory procedure and discharge volume are collectively estimated to be:

<u>Fission and Activation Gases</u>	<u>Isotopic</u>	<u>H-3</u>	<u>Fe-55</u>	<u>Sr</u>
29%	21%	26%	36%	29%

2. Gaseous

The maximum errors (not including sample line loss) associated with sample flow, vent flow, sample collection, monitor calibration and laboratory procedure are collectively estimated to be

<u>Fission and Activation Gases</u>	<u>Iodine</u>	<u>Particulate</u>	<u>Tritium</u>
39%	43%	42%	31%

3. Counting Error

- (1) Isotopic counting errors are computed by the equation:

$$\text{Error} = 1.96 \sqrt{C_B + C_S}$$

Where: C_B = Background counts

C_S = Sample counts

The isotopic counting errors are estimated to be 60% due to the low sample activity.

- (2) The gross counting errors associated with H-3, Sr-89, Sr-90, and Fe-55 are computed by the equation:

$$\text{Error} = 1.96 \sqrt{C_B + C_S}$$

Where: C_B = Background counts

C_S = Sample counts

The estimated error for gross counting is estimated to be 60% due to the low sample activity.

- (3) Solid Radioactive Waste. See Table 3 for error terms.

H. Solid Radioactive Waste Shipments

See Table 3 for shipment information.

I. Radiological Impact On Man

1. Water-Related Exposure Pathways

The values calculated in this section utilize information provided in Tables 2A, 2B and the ODCM.

<u>Total Dose (mrem)</u>		
	<u>3rd Quarter 1983</u>	<u>4th Quarter 1983</u>
Whole Body	0.00E+00	1.81 E-04
Bone	0.00E+00	1.37 E-04
Liver	0.00E+00	5.05 E-04
Thyroid	0.00E+00	2.48 E-05
Kidney	0.00E+00	1.38 E-04
Lung	0.00E+00	6.81 E-05
GI-LLI	0.00E+00	1.89 E-03

2. Gas-Related Exposure Pathways

The values calculated in this section utilize information provided in Tables 1A, 1C and the ODCM.

	<u>3rd Quarter 1983</u>	<u>4th Quarter 1983</u>
Total Body	1.76E-2 mrem	3.76E-2 mrem
Skin	1.05E-2 mrem	2.22E-2 mrem

Particulate, Iodine and Tritium

	<u>3rd Quarter 1983</u>	<u>4th Quarter 1983</u>
Organ Dose	0 mrem	9.89E-5 mrem

Lower Limit of Detection (LLD) Methodologies

If gaseous activity detected in the monthly isotopics is less than the LLDs, a Kr-85 calibration factor and a Kr-89 dose factor are inserted for the effluent monitors. The monitor net count rate is assumed to be zero whenever the monitor net count rate is less than two times the square root of the monitor background count rate.

J. Meteorological Data

See Tables 4A and 4B.

K. Radioactive Effluent Monitoring Instrument Inoperability Reports

During the reporting period, there were 10 events pertaining to the RETS that necessitated entering into a Limiting Condition for Operation (LCO) where the time period as specified in the Action Statements were exceeded. Of these 10 events, 8 were closed prior to Nuclear Heatup on September 25, 1983. The following explanations are provided as required by Technical Specifications 3.3.7.11.b and 3.3.7.12.b.

1. LCO EVENT 82-109

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
9/27/82, 1800 hrs.	Liquid Radwaste Flow Interlock	325 days, 19 hours	9/15/83, 1300 hrs.

b. Description

This LCO event was previously explained in Section 11.a of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

The temporary alteration was removed and the radwaste flow interlocks were restored on September 15, 1983, which was 10 days prior to Nuclear Heatup. The activity of the batch releases of glycol-contaminated water was beneath the Lower Limit of Detection as specified in the GGNS RETS.

2. LCO EVENTS 83-66, 83-83, 83-89

a. Recap

<u>LCO 83-</u>	<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
-66	1/14/83, 1320 hrs.	Radwaste Vent Flow	241 days	9/12/83, 1300 hrs.
-83	1/19/83, 1700 hrs.	Turbine Building Vent Flow	230 days, 15 hrs.	9/7/83, 0730 hrs.
- 89	1/22/83, 1000 hrs.	Fuel Hand- ling Area Vent Flow	233 days, 3 hrs.	9/12/83, 1300 hrs.

b. Description

These LCO events were previously explained in Section 11.c of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

The preoperational tests were completed and the panels returned to service on their respective close out dates prior to Nuclear Heatup.

3. LCO EVENT 83-172

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
2/28/83, 0800 hrs.	Containment Vent Flow	196 days, 5 hours	9/12/83, 1300 hrs.

b. Description

This LCO event was previously explained in Section 11.d of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

The preoperational test was completed and the panel was returned to service on September 12, 1983, prior to Nuclear Heatup.

4. LCO EVENT 83-323

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
4/18/83, 1315 hrs.	Radwaste Building Flow Channel	147 days	9/12/83, 1300 hrs.

b. Description

This LCO event was previously explained in Section 11.e of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

The panel was returned to service on September 12, 1983, prior to Nuclear Heatup.

5. LCO EVENT 83-360

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
5/5/83, 0230 hrs.	Liquid Radwaste Effluent Monitor	132 days, 8 hrs.	9/14/83, 1000 hrs.

b. Description

This LCO event was previously explained in Section 11.f of the January 1 - June 30, 1983, Semiannual Effluent Release Report (AECM-83/0513).

This panel was relocated and returned to service on September 12, 1983, prior to Nuclear Heatup.

6. LCO EVENT 83-372

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
5/12/83, 1300 hrs.	Containment Vent Flow	1/2 hr	5/12/83, 1330 hrs.

b. Description

This LCO event was previously explained and reported in error in Section 11.d of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

Originally LCO 83-372 was reported as being opened on 4/20/83, when in reality it was opened on 5/12/83 at 1300 hours and closed on 5/12/83 at 1330 hours. Since this LCO was only open for a half an hour and did not exceed the LCO time limit of 30 days, it was erroneously reported in the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

7. LCO EVENT 83-404

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
6/8/83, 1030 hrs.	Radwaste Building Vent Noble Gas Channel	85 days, 17 hrs.	9/1/83, 2200 hrs.

b. Description

This LCO event was previously explained in Section 11.g of the January 1 - June 30, 1983, Semiannual Radioactive Effluent Release Report (AECM-83/0513).

During the performance of a surveillance on this monitor, it was discovered that the noble gas channel did not respond properly to a source calibration. The affected channel was promptly taken out of service and Maintenance Work Order (MWO) I 36098 was issued to replace the GM tubes. These detectors were not in inventory and had to be ordered, which resulted in a delay in restoration.

The detectors were installed upon receipt and after the channel passed the required calibration it was returned to service on September 1, 1983.

Adequate stocks of these parts are now currently in our inventory preventing future delays.

8. LCO EVENT 83-718

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
10/18/83, 1500 hrs.	Offgas Pretreatment Monitor	6 days, 4 hrs.	10/24/83, 1900 hrs.

b. Description

On October 18, 1983, at 1500 hours the Offgas Pretreatment Monitor rotameter was found to be full of water, causing the noble gas monitor to be inoperative. On October 19, 1983, MWO 13A651 was written to drain water from the rotameter which is located on the pretreatment sample panel. Grab

samples were taken every 24 hours. On October 21, 1983, at 1458 hours release via this pathway was secured. Once water was drained from the rotameter, it was returned to service on October 24, 1983.

It was determined that the principal cause of the water in the rotameter was the lack of heat tracing in the sample panel. This has since been supplied to prevent reoccurrence.

9. LCO EVENT 83-805

a. Recap

<u>Date/Time Entered</u>	<u>Affected Channel</u>	<u>Duration</u>	<u>Closed Out Date/Time</u>
11/14/83, 1700 hrs.	Liquid Radwaste Flow Interlock		Open

b. Description

On November 14, 1983, a temporary alteration was performed in order to defeat the flow interlocks on the liquid radwaste discharge monitor. This would allow discharge of liquid radwaste when circulating water blowdown is not available for dilution flow, a condition that exists during circulating pump shutdown. Technical Specifications Position Statement 018 was approved by the Plant Safety Review Committee (PSRC) on December 13, 1983, to allow inoperability of this channel for longer than 30 days when extended shutdown of circulating pumps is necessary.

It should be noted that dilution is still provided by Plant Service Water return flow. A single service water pump provides 2500 gpm dilution flow to the discharge basin. Discharges via this pathway will be discontinued upon loss of all service water pumps.

Flow rates will be estimated every 4 hours during periods of release in accordance with Technical Specifications Table 3.3.7.11.-1 (Action 111). It is intended to leave this alteration in place until immediately prior to Nuclear Heatup.

III. 1983 RADIATION DOSE SUMMARY

Indicated below is the annual summary of offsite doses attributable to GCNS during 1983. Inspection of the quarterly and annual values indicate that GCNS releases were within the 10CFR50, Appendix I design objectives.

Since there are no other fuel cycle facilities within 8 km of GCNS, 40CFR190 limits have also been met during this period.

All parameters listed were calculated in accordance with the GCNS ODCM.

MAXIMUM* OFF-SITE DOSES AND DOSE COMMITMENTS TO MEMBERS OF THE PUBLIC

SOURCE	Dose (mrem)				
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
Liquid Effluents	0	0	0	1.89E-3	1.89E-3 ¹
Airborne Effluents (Iodine & Particulates)	0	0	0	9.89E-5	9.89E-5 ²
Noble Gases	3.74E-2	2.85E-2	1.76E-2	3.76E-2	1.21E-1 ³
Direct Radiation	0	0	0	0	0 ⁴

*"Maximum" means the largest fraction of the corresponding Appendix I dose design objective.

¹ GI tract dose primarily by the fish pathway. This represents 1.89E-2% of the 10CFR50, Appendix I design objective.

² Organ dose primarily by the grass-cow-milk pathway. This represents 6.59E-4% of the 10CFR50, Appendix I design objective.

³ mrad gamma dose to the whole body.

⁴ Based on site boundary thermoluminescent dosimeter (TLD) badges.

TABLE 1A

Gaseous Effluents-Summation
of All Releases

	Unit	Quarter 3	Quarter 4	Est Total	Error %
Grand Gulf Nuclear Power Plant UNIT 1					
A. Fission & activation gases					
1. Total release	C1	6.53E+00	1.46E+01	6.80E+01	
2. Average release rate for period	uCi/sec	8.31E-01	1.84E+00		
3. % of Technical specification limit	%	3.57E-01	7.47E-01		
B. Iodines					
1. Total iodine-131	C1	0.00E+00	2.69E-07	6.80E+01	
2. Average release rate for period	uCi/sec	0.00E+00	3.38E-08		
3. % of Technical specification limit	%	0.00E+00	6.20E-04		
C. Particulates					
1. Particulates with half-lives > 8 days	C1	0.00E+00	4.47E-05	6.80E+01	
2. Average release rate for period	uCi/sec	0.00E+00	5.63E-06		
3. % of Technical specification limit	%	0.00E+00	6.98E-04		
4. Gross alpha radioactivity	C1	2.30E-07	3.00E-07		
D. Tritium					
1. Total release	C1	0.00E+00	8.84E-05	6.80E+01	
2. Average release rate for period	uCi/sec	0.00E+00	1.11E-05		
3. % of Technical specification limit	%	0.00E+00	3.40E-07		
E. Tritium, radiodines and particulates					
1. % of Technical specification limit	C1	0.00E+00	1.32E-03		

* Percentages are based on Technical Specifications as specified in 10 CFR 50, Appendix I.

TABLE 1B

Gaseous Effluents - Elevated Releases

(Not Applicable - GGNS Releases are considered ground level)

TABLE 1C

Gaseous Effluents—Ground-Level Release

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
1. Fission gases					
Xe-136	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-131M	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-88	C1	0.00E+00	6.95E-02	0.00E+00	0.00E+00
Xe-138M	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-135	C1	0.00E+00	3.23E-01	0.00E+00	0.00E+00
Kr-85M	C1	0.00E+00	3.23E-02	0.00E+00	0.00E+00
Kr-87	C1	0.00E+00	7.92E-02	0.00E+00	0.00E+00
Xe-138	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-137	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-85	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-135M	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-82	C1	5.99E+00	1.18E+01	0.00E+00	0.00E+00
Ar-41	C1	5.42E-01	2.31E+00	0.00E+00	0.00E+00
Kr-90	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	C1	6.53E+00	1.46E+01	0.00E+00	0.00E+00
2. Iodines					
I-131	C1	0.00E+00	2.69E-07	0.00E+00	0.00E+00
I-133	C1	0.00E+00	3.71E-06	0.00E+00	0.00E+00
I-132	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	C1	0.00E+00	3.98E-06	0.00E+00	0.00E+00
3. Particulates					
Sr-84	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE-95	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-57	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C-14	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1-C (continued)

ZN-65	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-Y1	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	C1	0.00E+00	4.47E-05	0.00E+00	0.00E+00
AU-110M	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-151	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	C1	0.00E+00	4.47E-05	0.00E+00	0.00E+00

TABLE 2A

Liquid Effluents-Summation of All Releases

	Unit	Quarter 3	Quarter 4	Est. Total Error %
A. Fission & activation products				
1. Total release (not including H3, gases-alpha)	Ci	0.00E+00	4.42E-03	6.80E+01
2. Average diluted concentration during period	uCi/ml	0.00E+00	8.06E-09	
3. Percent of applicable limit	%	0.00E+00	4.75E-03	
B. Tritium				
1. Total release	Ci	0.00E+00	2.89E-03	6.80E+01
2. Average diluted concentration during period	uCi/ml	0.00E+00	7.10E-09	
3. Percent of applicable limit	%	0.00E+00	2.37E-04	
C. Dissolved and entrained gases				
1. Total release	Ci	0.00E+00	0.00E+00	6.80E+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	
D. Gross alpha radioactivity				
1. Total release	Ci	0.00E+00	0.00E+00	6.80E+01
E. Volume of waste (prior to dilution):				
	liters	1.31E+07	9.15E+06	6.80E+01
F. Volume of dilution water used				
	liters	1.29E+09	5.39E+08	6.80E+01

* Percentages based on 10 CFR 20, Appendix B, Table II, Column 2.

TABLE 2B

Liquid Effluents—Continuous and Batch Modes

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
strontium-80	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
strontium-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cesium-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cesium-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
iodine-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cobalt-58	Ci	0.00E+00	0.00E+00	0.00E+00	9.66E-04
cobalt-60	Ci	0.00E+00	0.00E+00	0.00E+00	1.83E-04
iron-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
zinc-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
manganese-54	Ci	0.00E+00	0.00E+00	0.00E+00	2.57E-04
chromium-51	Ci	0.00E+00	0.00E+00	0.00E+00	2.08E-04
zirconium-niobium-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
molybdenum-99	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
technetium-99m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
barium-lanthanum-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cerium-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cu-64	Ci	0.00E+00	0.00E+00	0.00E+00	2.24E-04
Na-24	Ci	0.00E+00	0.00E+00	0.00E+00	1.10E-04
Fe-55	Ci	0.00E+00	0.00E+00	0.00E+00	2.47E-03
Total for period (above)	Ci	0.00E+00	0.00E+00	0.00E+00	4.42E-03
xenon-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
xenon-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 3

Solid Radioactive Waste and Irradiated Fuel Shipments

A. Solid Waste Shipped Offsite for Burial or Disposal

1. Type of Waste	Unit	6-month period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ Ci	3.04E02 7.21E00	3.63E01
b. Dry compressible waste, contaminated equipment, etc.	m ³ Ci	7.99E00 3.60E-3	8.20E00
c. Irradiated components, control rods, etc.	m ³ Ci	None None	N/A N/A
d. Other	m ³ Ci	None None	N/A N/A
2. Estimate of major radionuclide composition (by type of waste as identified above)			
a. Cr-51	%	8.18E01	
Co-58	%	1.08E01	
Zn-65	%	2.30E00	
Fe-59	%	2.20E00	
Mn-54	%	1.70E00	
Co-60	%	1.10E00	
Ce-144	%	8.00E-2	
Zr-95	%	3.00E-2	
Nb-95	%	7.00E-3	
Be-7	%	4.00E-3	
I-131	%	2.00E-3	
Mo-99	%	5.00E-4	
Sb-124	%	3.00E-4	
b. Co-60	%	1.00E02	
c. None	%	N/A	
d. None	%	N/A	

TABLE 3

Solid Radioactive Waste and Irradiated Fuel Shipments (cont'd)

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
13	Truck	Barnwell, SC
12	Truck	Hanford, WA

B. Irradiated Fuel Shipments (Disposition)

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

TABLE 4A
Joint Frequency Distribution
50 Meter Level

EXTREMELY UNSTABLE STABILITY CLASS A
PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)							TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP		
N	.4	.4	.0	.0	.0	.0	.0	.8	.0
NNE	.4	.0	.0	.0	.0	.0	.0	.4	.0
NE	.4	.0	.0	.0	.0	.0	.0	.4	.0
ENE	.4	.0	.0	.0	.0	.0	.0	.4	.0
E	.4	.6	.0	.0	.0	.0	.0	1.0	.0
ESE	1.0	.2	.0	.0	.0	.0	.0	1.2	.0
SSE	3.9	1.8	.0	.0	.0	.0	.0	5.7	.1
SSE	4.1	4.5	.4	.0	.0	.0	.0	9.0	.3
SSW	3.7	3.9	.2	.0	.0	.0	.0	7.8	.2
SSW	4.9	4.9	.6	.0	.0	.0	.0	10.4	.3
SW	12.7	3.3	.8	.0	.0	.0	.0	16.9	.4
WSW	12.7	2.5	1.6	.0	.0	.0	.0	16.9	.4
W	8.2	2.1	.2	.0	.0	.0	.0	10.6	.2
WNW	6.5	1.8	.0	.0	.0	.0	.0	8.2	.2
NW	4.5	1.4	.6	.0	.0	.0	.0	6.5	.2
NNW	1.8	1.2	.4	.2	.0	.0	.0	3.5	.1
CALM	.4							.4	
TOTAL	66.5	28.6	4.7	.2	.0	.0	.0	100.0	.2

2. HOURS OF BAD OR MISSING DATA OR .4 PERCENT FOP 512 HOURS

TABLE 4A (cont'd)
Joint Frequency Distribution
50 Meter Level

MODERATELY UNSTABLE STABILITY CLASS B
PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND DIRECTION	WIND SPEED (m/sec)										TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP					
N	4.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.8	.1
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.0
E	.9	.9	.0	.0	.0	.0	.0	.0	.0	.0	1.9	.1
ESE	2.8	.9	.0	.0	.0	.0	.0	.0	.0	.0	3.8	.1
ESE	8.6	3.8	.0	.9	.0	.0	.0	.0	.0	.0	13.3	.4
ESE	4.8	2.8	1.9	.0	.0	.0	.0	.0	.0	.0	9.5	.1
ESE	3.8	2.8	.0	.0	.0	.0	.0	.0	.0	.0	6.7	.2
ESE	6.7	.9	.9	.0	.0	.0	.0	.0	.0	.0	8.6	.2
ESE	5.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.7	.1
ESE	2.8	.9	.0	.0	.0	.0	.0	.0	.0	.0	3.8	.1
ESE	3.8	1.9	.0	.0	.0	.0	.0	.0	.0	.0	5.7	.1
ESE	3.8	2.8	.0	.0	.0	.0	.0	.0	.0	.0	6.7	.2
ESE	10.5	1.9	.0	.0	.0	.0	.0	.0	.0	.0	12.4	.2
ESE	3.8	10.5	.9	.0	.0	.0	.0	.0	.0	.0	15.2	.5
ESE	.9	.9	.9	.9	.0	.0	.0	.0	.0	.0	.9	.9
TOTAL	64.8	30.5	3.8	.9	.0	.0	.0	.0	.0	.0	100.0	.2

1. HOURS OF BAD OR MISSING DATA OR .9 PERCENT FOR 106 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

SLIGHTLY UNSTABLE STABILITY CLASS C
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	7.7	.8	.0	.0	.0	.0	.0	8.5	.2
NNE	3.1	1.5	.0	.0	.0	.0	.0	4.6	.1
NE	1.5	.0	.0	.0	.0	.0	.0	1.5	.0
ENE	2.3	1.5	.0	.0	.0	.0	.0	3.8	.1
E	.8	.8	.0	.0	.0	.0	.0	1.5	.0
ESE	6.9	3.1	.0	.0	.0	.0	.0	10.0	.3
SE	7.7	3.1	.8	.8	.0	.0	.0	12.3	.4
E SSE	3.1	4.6	.8	.8	.0	.0	.0	9.2	.4
CS	3.1	1.5	.0	.0	.0	.0	.0	4.6	.1
TSSW	.8	1.5	1.5	.0	.0	.0	.0	3.8	.2
ISW	1.5	.0	.8	.0	.0	.0	.0	2.3	.1
WSW	.8	.8	.0	.8	.0	.0	.0	2.3	.1
W	5.4	1.5	.0	.0	.0	.0	.0	6.9	.2
WNW	3.8	.0	.0	.0	.0	.0	.0	3.8	.0
NW	5.4	1.5	.0	.0	.0	.0	.0	6.9	.1
NNW	6.9	7.7	.0	1.5	.0	.0	.0	16.1	.6
CALM	1.5							1.5	
TOTAL	62.3	30.0	3.8	3.8	.0	.0	.0	100.0	.7

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 130 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

NEUTRAL STABILITY CLASS D
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	5.5	5.8	.2	.0	.0	.0	.0	11.5	.4
NNE	6.7	2.4	.1	.0	.0	.0	.0	9.3	.2
NE	8.6	3.3	.0	.0	.0	.0	.0	11.9	.3
ENE	5.0	1.0	.0	.0	.0	.0	.0	6.1	.1
E	6.6	2.6	.0	.0	.0	.0	.0	9.2	.2
ESE	5.8	3.3	.5	.0	.0	.0	.0	9.5	.3
ESE	3.8	1.3	.1	.0	.0	.0	.0	5.2	.1
SE	2.1	.9	.7	.0	.0	.0	.0	3.7	.1
SSE	1.0	.6	.0	.0	.0	.0	.0	1.6	.0
S	1.0	.7	.0	.0	.0	.0	.0	1.7	.0
SSW	1.2	.5	.1	.1	.0	.0	.0	1.9	.0
SW	1.0	.6	.1	.0	.0	.0	.0	1.7	.0
WSW	1.0	.7	.0	.0	.0	.0	.0	1.7	.0
W	1.0	1.9	.1	.0	.0	.0	.0	3.0	.1
WNW	2.4	3.8	.6	.0	.0	.0	.0	6.9	.2
NW	4.4	6.9	2.4	.1	.0	.0	.0	13.9	.6
NNW	.9							.9	
CALM									
TOTAL	58.5	36.2	5.0	.2	.0	.0	.0	100.0	.2

45. HOURS OF BAD OR MISSING DATA OR 5.0 PERCENT FOR 903 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

SLIGHTLY STABLE STABILITY CLASS E
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	3.4	1.9	.1	.0	.0	.0	.0	5.4	.1
NNE	3.8	3.0	.0	.0	.0	.0	.0	6.8	.2
NE	3.8	1.9	.0	.0	.0	.0	.0	5.7	.1
ENE	3.6	.6	.0	.0	.0	.0	.0	4.2	.1
E	4.8	5.8	.2	.0	.0	.0	.0	10.8	.3
ESE	4.4	8.6	.5	.0	.0	.0	.0	13.5	.5
ESE	3.9	7.0	1.4	.0	.0	.0	.0	12.3	.5
SE	2.5	3.4	1.0	.1	.0	.0	.0	7.0	.3
SSE	3.5	2.3	.4	.0	.0	.0	.0	6.2	.2
S	3.2	3.4	.3	.0	.0	.0	.0	6.9	.2
SSW	2.4	2.3	.1	.0	.0	.0	.0	4.8	.1
SW	1.7	2.0	.1	.0	.0	.0	.0	3.8	.1
WSW	1.1	1.3	.4	.0	.0	.0	.0	2.8	.1
W	1.2	.5	.2	.0	.0	.0	.0	1.9	.0
WNW	1.9	1.4	.1	.0	.0	.0	.0	3.3	.1
NW	2.5	.5	.3	.0	.0	.0	.0	3.3	.1
NNW	1.0							1.0	
CALM									

TOTAL	48.9	46.0	5.0	.1	.0	.0	.0	100.0	.2

4. HOURS OF BAD OR MISSING DATA OR .3 PERCENT FOR 1229 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

MODERATELY STABLE STABILITY CLASS F
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	1.9	.8	.0	.0	.0	.0	.0	2.7	.1
NNE	2.7	2.4	.0	.0	.0	.0	.0	5.1	.1
NE	3.0	3.0	.0	.0	.0	.0	.0	6.0	.2
ENE	2.6	3.0	.0	.0	.0	.0	.0	5.6	.2
DE	4.1	7.7	.0	.1	.0	.0	.0	12.0	.4
DI ESE	5.1	13.0	1.1	.0	.0	.0	.0	19.3	.7
R SE	4.0	4.4	.3	.1	.0	.0	.0	8.9	.3
WE SSE	4.7	4.9	.4	.0	.0	.0	.0	10.0	.3
I CS	3.4	2.4	.0	.0	.0	.0	.0	5.9	.2
N T SSW	4.1	.6	.0	.0	.0	.0	.0	4.7	.1
D I SW	3.4	1.1	.1	.0	.0	.0	.0	4.7	.1
O WSW	1.9	1.4	.0	.0	.0	.0	.0	3.3	.1
N W	1.9	1.1	.1	.0	.0	.0	.0	3.1	.1
WNW	2.4	.3	.1	.0	.0	.0	.0	2.9	.1
NW	1.0	.4	.0	.0	.0	.0	.0	1.4	.0
NNW	2.4	.7	.0	.0	.0	.0	.0	3.1	.1
CALM	1.0							1.0	

TOTAL	49.8	47.6	2.3	.3	.0	.0	.0	100.0	.2

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 698 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

EXTREMELY STABLE STABILITY CLASS G
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	2.5	.4	.0	.0	.0	.0	.0	2.9	.1
NNE	3.5	1.0	.0	.0	.0	.0	.0	4.6	.1
NE	4.9	2.6	.0	.0	.0	.0	.0	7.5	.2
ENE	4.7	4.3	.0	.0	.0	.0	.0	9.0	.3
U F	4.1	7.9	.0	.0	.0	.0	.0	12.1	.4
I ESE	5.6	7.8	.3	.0	.0	.0	.0	13.7	.4
R SE	6.2	5.0	.6	.0	.0	.0	.0	11.8	.4
W E SSE	4.9	2.5	.0	.0	.0	.0	.0	7.4	.2
I C S	5.0	.6	.0	.0	.0	.0	.0	5.6	.1
N T SSW	6.2	1.0	.0	.0	.0	.0	.0	7.2	.2
D I SW	4.7	.6	.3	.0	.0	.0	.0	5.6	.1
O WSW	2.8	.4	.3	.0	.0	.0	.0	3.5	.1
H W	1.8	.1	.0	.0	.0	.0	.0	1.9	.0
WNW	1.2	.0	.0	.0	.0	.0	.0	1.2	.0
NW	1.0	.0	.0	.0	.0	.0	.0	1.0	.0
NW	1.8	.0	.0	.0	.0	.0	.0	1.8	.0
CALM	3.2							3.2	
TOTAL	64.1	34.5	1.5	.0	.0	.0	.0	100.0	.2

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 679 HOURS

TABLE 4A (cont'd)
Joint Frequency Distribution
10 Meter Level

EXTREMELY UNSTABLE STABILITY CLASS A
PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

DIRECTION	WIND SPEED (m/sec)								TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP			
N	1.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
NNE	.2	.0	.0	.0	.0	.0	.0	.0	.2	.0
NE	.4	.0	.0	.0	.0	.0	.0	.0	.4	.0
ENE	1.4	.0	.0	.0	.0	.0	.0	.0	1.4	.0
E	1.2	.0	.0	.0	.0	.0	.0	.0	1.2	.0
ESE	1.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
ESE	2.9	.0	.0	.0	.0	.0	.0	.0	2.9	.1
SE	6.7	1.2	.0	.0	.0	.0	.0	.0	7.9	.2
SSE	9.4	1.6	.0	.0	.0	.0	.0	.0	11.0	.3
S	13.6	1.0	.0	.0	.0	.0	.0	.0	14.6	.3
SSW	14.4	1.4	.0	.0	.0	.0	.0	.0	15.7	.2
SW	14.0	.8	.0	.0	.0	.0	.0	.0	14.8	.1
WSW	8.8	.0	.0	.0	.0	.0	.0	.0	8.8	.1
W	8.5	.2	.0	.0	.0	.0	.0	.0	8.7	.1
WNW	6.1	.0	.0	.0	.0	.0	.0	.0	6.1	.1
W	2.2	1.0	.0	.0	.0	.0	.0	.0	3.1	.1
WNW	1.2	.0	.0	.0	.0	.0	.0	.0	1.2	.1
CALM										
TOTAL	92.9	7.1	.0	.0	.0	.0	.0	.0	100.0	.1

4. HOURS OF BAD OR MISSING DATA OR .8 PERCENT FOR 512 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

MODERATELY UNSTABLE STABILITY CLASS B
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)										TOTAL	AVG SPEED	
	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP						
N	3.9	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.9	.1
NNE	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
ESE	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.9	.0
SE	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.9	.0
SSE	10.8	3.9	1.0	.0	.0	.0	.0	.0	.0	.0	.0	15.7	.4
S	7.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	8.8	.2
SSW	10.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	11.8	.2
SW	4.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.9	.1
WSW	4.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.9	.1
W	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.9	.0
WNW	9.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.8	.2
NW	11.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	12.7	.2
VNW	10.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	11.8	.3
CALM	3.9											3.9	
TOTAL	90.2	8.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	.1

4. HOURS OF BAD OR MISSING DATA OR 3.8 PERCENT FOR 106 HOURS

TABLE 4A (cont'd)
Joint Frequency Distribution
10 Meter Level

SLIGHTLY UNSTABLE STABILITY CLASS C
PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)							18 AND UP	TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17				
N	9.7	.8	.0	.0	.0	.0	.0	10.5	.2	
NNE	5.6	.0	.0	.0	.0	.0	.0	5.6	.1	
NE	5.6	.0	.0	.0	.0	.0	.0	5.6	.1	
ENE	.8	.0	.0	.0	.0	.0	.0	.8	.0	
E	.8	.0	.0	.0	.0	.0	.0	.8	.0	
ESE	3.2	.0	.0	.0	.0	.0	.0	3.2	.0	
SE	5.6	.0	.0	.0	.0	.0	.0	5.6	.1	
SSE	10.5	4.0	.8	.0	.0	.0	.0	15.3	.4	
S	4.0	.0	.0	.0	.0	.0	.0	4.0	.1	
SSW	4.8	1.6	.0	.0	.0	.0	.0	6.4	.1	
SW	2.4	1.6	.0	.0	.0	.0	.0	4.0	.1	
WSW	4.8	.0	.0	.0	.0	.0	.0	4.8	.1	
W	4.8	.0	.0	.0	.0	.0	.0	4.8	.0	
WNW	4.8	.0	.0	.0	.0	.0	.0	4.8	.1	
NW	8.1	.0	.0	.0	.0	.0	.0	8.1	.1	
NNW	11.3	.8	.0	.0	.0	.0	.0	12.1	.2	
CALM	3.2							3.2		
TOTAL	90.3	8.9	.8	.0	.0	.0	.0	100.0	.1	

6. HOURS OF BAD OR MISSING DATA OR 4.6 PERCENT FOR 130 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

NEUTRAL STABILITY CLASS D
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	14.1	2.3	.0	.0	.0	.0	.0	16.4	.3
NNE	11.7	.0	.0	.0	.0	.0	.0	11.7	.2
NE	11.1	.4	.0	.0	.0	.0	.0	11.4	.2
ENE	6.4	.0	.0	.0	.0	.0	.0	6.4	.1
E	3.6	.0	.0	.0	.0	.0	.0	3.6	.0
ESE	5.1	.0	.0	.0	.0	.0	.0	5.1	.1
SE	3.3	.1	.0	.0	.0	.0	.0	3.4	.0
SSE	3.3	.7	.0	.0	.0	.0	.0	4.0	.1
S	3.4	.5	.0	.0	.0	.0	.0	3.9	.1
SSW	2.7	.0	.0	.0	.0	.0	.0	2.7	.0
SW	1.7	.4	.0	.0	.0	.0	.0	2.1	.0
WSW	1.4	.0	.0	.0	.0	.0	.0	1.4	.0
W	1.7	.0	.0	.0	.0	.0	.0	1.7	.0
WNW	3.2	.0	.0	.0	.0	.0	.0	3.2	.0
NW	6.8	.4	.0	.0	.0	.0	.0	7.2	.1
NNW	9.0	2.4	.0	.0	.0	.0	.0	11.4	.3
CALM	4.2							4.2	
TOTAL	92.8	7.2	.0	.0	.0	.0	.0	100.0	.1

81. HOURS OF BAD OR MISSING DATA OR 9.0 PERCENT FOR 903 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

SLIGHTLY STABLE STABILITY CLASS E
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)							TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP		
N	7.6	.5	.0	.0	.0	.0	.0	8.1	.1
NNE	7.3	.1	.0	.0	.0	.0	.0	7.3	.1
NE	8.2	.0	.0	.0	.0	.0	.0	8.2	.1
ENE	7.7	.0	.0	.0	.0	.0	.0	7.7	.1
E	5.9	.0	.0	.0	.0	.0	.0	5.9	.1
ESE	4.6	.0	.0	.0	.0	.0	.0	4.6	.0
SE	4.2	.0	.0	.0	.0	.0	.0	4.2	.0
SSE	5.6	1.6	.1	.0	.0	.0	.0	7.3	.1
S	7.7	1.0	.0	.0	.0	.0	.0	8.7	.1
SSW	6.6	.2	.0	.0	.0	.0	.0	6.8	.1
SW	3.5	.2	.0	.0	.0	.0	.0	3.7	.1
WSW	2.1	.0	.0	.0	.0	.0	.0	2.1	.0
W	2.0	.1	.0	.0	.0	.0	.0	2.1	.0
WNW	1.9	.2	.0	.0	.0	.0	.0	2.0	.0
NW	2.7	.2	.0	.0	.0	.0	.0	2.8	.0
NNW	4.1	.6	.0	.0	.0	.0	.0	4.6	.1
CALM	13.5							13.5	
TOTAL	95.4	4.5	.1	.0	.0	.0	.0	100.0	.1

4. HOURS OF BAD OR MISSING DATA OR .3 PERCENT FOR 1229 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

MODERATELY STABLE STABILITY CLASS F
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)										18 AND UP	TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17							
N	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.9	.0
NNE	5.9	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.0	.1
NE	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	11.0	.1
ENE	12.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	12.9	.1
E	10.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	10.4	.1
ESE	4.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.6	.0
SE	3.6	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.7	.0
SSE	3.7	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.0	.0
S	2.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.1	.0
SSW	1.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3	.0
SW	2.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.0	.0
WSW	1.4	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.6	.0
W	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
WNW	1.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	.0
NW	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0
NNW	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.9	.0
CALM	31.7											31.7	
TOTAL	99.0	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	.1

0. HOURS OF BAD OR MISSING DATA UR .0 PERCENT FOR 698 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

EXTREMELY STABLE STABILITY CLASS C
 PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

	WIND SPEED (m/sec)							18 AND UP	TOTAL	AVG SPEED
	0-2	3-5	6-8	9-11	12-14	15-17				
D	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
I	1.6	.0	.0	.0	.0	.0	.0	.0	1.6	.0
R	10.6	.0	.0	.0	.0	.0	.0	.0	10.6	.1
F	17.4	.0	.0	.0	.0	.0	.0	.0	17.4	.1
S	12.2	.0	.0	.0	.0	.0	.0	.0	12.2	.1
I	3.1	.0	.0	.0	.0	.0	.0	.0	3.1	.0
C	1.0	.0	.0	.0	.0	.0	.0	.0	1.0	.0
N	.3	.1	.0	.0	.0	.0	.0	.0	.4	.0
T	.3	.0	.0	.0	.0	.0	.0	.0	.3	.0
S	.6	.0	.0	.0	.0	.0	.0	.0	.6	.0
W	.9	.4	.0	.0	.0	.0	.0	.0	1.3	.0
I	.6	.0	.0	.0	.0	.0	.0	.0	.6	.0
I	.3	.0	.0	.0	.0	.0	.0	.0	.3	.0
W	.1	.0	.0	.0	.0	.0	.0	.0	.1	.0
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
N	.3	.0	.0	.0	.0	.0	.0	.0	.3	.0
CALM	50.1								50.1	.0
TOTAL	99.4	.6	.0	.0	.0	.0	.0	.0	100.0	.1

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 679 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 50 Meter Level

STABILITY CLASS A - G

PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	3.2	2.0	.1	.0	.0	.0	.0	5.3	.1
NNE	3.6	2.0	.0	.0	.0	.0	.0	5.6	.1
NE	4.2	2.1	.0	.0	.0	.0	.0	6.4	.2
ENE	3.4	1.6	.0	.0	.0	.0	.0	5.0	.1
E	4.2	4.9	.0	.0	.0	.0	.0	9.2	.3
ESE	4.6	6.7	.5	.0	.0	.0	.0	11.9	.4
ESE	4.5	4.2	.6	.1	.0	.0	.0	9.4	.3
SE	3.4	3.2	.6	.0	.0	.0	.0	7.3	.2
SSE	3.2	1.9	.1	.0	.0	.0	.0	5.3	.1
SSW	3.6	2.1	.2	.0	.0	.0	.0	5.9	.2
SSW	4.0	1.4	.2	.0	.0	.0	.0	5.7	.1
SW	3.1	1.4	.3	.0	.0	.0	.0	4.8	.1
WSW	2.4	1.1	.2	.0	.0	.0	.0	3.7	.1
W	2.2	.8	.1	.0	.0	.0	.0	3.1	.1
WNW	2.4	1.5	.2	.0	.0	.0	.0	4.1	.1
NW	2.8	2.3	.7	.1	.0	.0	.0	5.9	.2
NW	2.8							1.3	
CALM	2.8							1.3	
TOTAL	56.4	39.4	3.9	.3	.0	.0	.0	100.0	.2

211. HOURS OF BAD OR MISSING DATA OR 4.8 PERCENT FOR 4416 HOURS

TABLE 4A (cont'd)
 Joint Frequency Distribution
 10 Meter Level

STABILITY CLASS A - C

PERIOD OF RECORD: 06/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	6.0	.6	.0	.0	.0	.0	.0	6.7	.1
NNE	5.9	.0	.0	.0	.0	.0	.0	6.0	.1
NE	8.4	.1	.0	.0	.0	.0	.0	8.5	.1
ENE	8.8	.0	.0	.0	.0	.0	.0	8.8	.1
E	6.4	.0	.0	.0	.0	.0	.0	6.4	.1
ESE	3.9	.0	.0	.0	.0	.0	.0	3.9	.0
ESE	3.3	.0	.0	.0	.0	.0	.0	3.3	.0
SE	4.4	1.0	.1	.0	.0	.0	.0	5.5	.1
SSE	4.8	.6	.0	.0	.0	.0	.0	5.4	.1
CS	4.8	.3	.0	.0	.0	.0	.0	5.1	.1
SSW	3.8	.4	.0	.0	.0	.0	.0	4.2	.1
ISW	3.2	.1	.0	.0	.0	.0	.0	3.3	.0
WSW	2.4	.0	.0	.0	.0	.0	.0	2.5	.0
W	2.8	.1	.0	.0	.0	.0	.0	2.9	.0
WNW	3.5	.1	.0	.0	.0	.0	.0	3.7	.1
NW	4.4	.8	.0	.0	.0	.0	.0	5.2	.1
NW	4.4							18.6	
CALM	4.4								

TOTAL	95.6	4.3	.1	.0	.0	.0	.0	100.0	.1

258. HOURS OF BAD OR MISSING DATA OR 5.8 PERCENT FOR 4416 HOURS

TABLE 4A (cont'd)

PERCENT BAD DATA REPORT

PERIOD OF RECORD 06/01/83 000 Hours - 12/31/83 2400 Hours

	REPORT COVERS 4416HOURS	
	HOURS	PERCENT
50M DIRECTION	156.	3.53
50M WIND SPEED	208.	4.71
10M DIRECTION	156.	3.53
10M WIND SPEED	255.	5.77
TEMPERATURE	156.	3.53
DEW POINT	1211.	27.42
DELTA T	159.	3.60
PRECIPITATION	281.	6.36

TABLE 4B
 Joint Frequency Distribution
 50 Meter Level

EXTREMELY UNSTABLE STABILITY CLASS A
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	1.3	1.3	.3	.0	.0	.0	.0	3.0	.1
NNE	.5	.0	.0	.0	.0	.0	.0	.5	.0
NE	1.6	.1	.0	.0	.0	.0	.0	1.7	.0
ENE	.8	.2	.0	.0	.0	.0	.0	1.0	.0
E	.7	.8	.0	.0	.0	.0	.0	1.4	.0
ESE	1.0	1.1	.2	.5	.0	.0	.0	2.9	.1
RSE	3.2	1.4	.1	.0	.0	.0	.0	4.6	.1
WESSE	3.1	3.6	.2	.0	.0	.0	.0	6.9	.2
ICS	3.2	4.4	.7	.0	.0	.0	.0	8.3	.3
NTSSW	4.2	4.2	.4	.1	.0	.0	.0	9.0	.3
D1SW	10.9	4.0	.4	.0	.0	.0	.0	15.4	.4
WSW	9.6	3.8	1.4	.1	.0	.0	.0	14.9	.5
NW	6.6	3.1	.3	.0	.1	.0	.0	10.1	.3
WNW	6.0	1.4	.1	.0	.0	.0	.0	7.6	.2
NW	4.9	1.3	.3	.0	.0	.0	.0	6.6	.2
NNW	2.1	2.6	.4	.1	.0	.0	.0	5.2	.2
CALM	.5							.5	
TOTAL	60.3	33.5	5.1	.9	.1	.0	.0	100.0	.7

3. HOURS OF BAD OR MISSING DATA OR .3 PERCENT FOR 901 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

MODERATELY UNSTABLE STABILITY CLASS B
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	5.1	1.8	1.8	.0	.0	.0	.0	8.8	.3
NNE	1.4	.4	.0	.0	.0	.0	.0	1.8	.0
NE	.7	.4	.0	.0	.0	.0	.0	1.1	.0
ENE	1.1	.0	.0	.0	.0	.0	.0	1.1	.0
E	1.4	2.2	.7	.0	.0	.0	.0	4.4	.2
ESE	1.8	1.4	.0	.0	.0	.0	.0	3.3	.1
ESE	4.4	4.0	.0	.4	.0	.0	.0	8.8	.3
SE	3.3	4.7	.7	.0	.0	.0	.0	8.8	.3
SSE	1.8	2.6	.0	.0	.0	.0	.0	4.4	.1
S	4.0	1.4	1.4	.7	.0	.0	.0	7.7	.3
SSW	3.6	1.1	.4	.0	.0	.0	.0	5.1	.1
SW	2.9	2.2	.4	.0	.0	.0	.0	5.5	.2
WSW	3.6	1.4	.0	.0	.0	.0	.0	5.1	.1
W	5.1	3.6	.4	.0	.0	.0	.0	9.1	.3
WNW	10.2	1.1	.0	.0	.0	.0	.0	11.3	.2
W	4.4	7.7	1.1	.0	.0	.0	.0	13.1	.5
NW	.7							.7	
CALM									
TOTAL	55.8	36.1	6.9	1.1	.0	.0	.0	100.0	.2

4. HOURS OF BAD OR MISSING DATA OR 1.4 PERCENT FOR 278 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

SLIGHTLY UNSTABLE STABILITY CLASS C
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	5.6	1.6	1.0	.0	.0	.0	.0	8.2	.2
NNE	1.6	3.3	1.0	.0	.0	.0	.0	5.9	.3
NE	1.6	2.0	.0	.0	.0	.0	.0	3.6	.1
ENE	2.3	1.3	.0	.0	.0	.0	.0	3.6	.1
E	1.0	1.0	.3	.3	.0	.0	.0	2.6	.1
ESE	4.3	3.0	.3	.0	.0	.0	.0	7.6	.2
ESE	4.3	3.6	.3	.6	.0	.0	.0	8.9	.3
SE	2.6	4.6	.3	.3	.0	.0	.0	7.9	.3
SSE	2.6	1.3	.3	.0	.0	.0	.0	4.3	.1
S	1.6	1.6	2.3	.0	.0	.0	.0	5.6	.3
SSW	2.0	.0	.3	.0	.0	.0	.0	2.3	.0
SW	2.3	2.0	.0	.3	.0	.0	.0	4.6	.1
WSW	4.6	1.6	.0	.0	.0	.0	.0	6.3	.2
W	3.0	.3	.3	.0	.0	.0	.0	3.6	.1
WNW	6.6	2.0	.0	.0	.0	.0	.0	8.5	.2
W	7.2	6.9	.3	.6	.0	.0	.0	15.1	.5
NW	1.3							1.3	
CALM									
TOTAL	54.6	36.2	6.9	2.3	.0	.0	.0	100.0	.2

1. HOURS OF BAD OR MISSING DATA OR .3 PERCENT FOR 305 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

NEUTRAL. STABILITY CLASS D
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	4.6	6.9	.8	.0	.0	.0	.0	12.3	.4
NNE	4.9	3.0	.2	.0	.0	.0	.0	8.1	.2
NE	5.6	4.0	.3	.0	.0	.0	.0	9.9	.3
ENE	3.6	2.4	.1	.0	.0	.0	.0	6.2	.2
E	3.9	2.1	.1	.1	.0	.0	.0	6.3	.2
ESE	4.2	3.0	.3	.0	.0	.0	.0	7.6	.2
ESE	3.1	1.8	.3	.0	.0	.0	.0	5.3	.2
SSE	1.9	1.5	.3	.0	.0	.0	.0	3.8	.1
S	1.4	1.1	.2	.0	.0	.0	.0	2.7	.1
SSW	1.8	1.1	.4	.2	.0	.0	.0	3.6	.1
SW	1.5	1.2	.7	.1	.0	.0	.0	3.5	.1
WSW	2.1	.9	.6	.0	.0	.0	.0	3.8	.1
W	2.6	1.0	.5	.0	.0	.0	.0	4.1	.1
WNW	2.4	2.0	.7	.0	.0	.0	.0	5.2	.2
W	2.7	2.7	.4	.0	.0	.0	.0	5.8	.2
NNW	4.3	4.9	1.5	.0	.0	.0	.0	10.8	.4
CALM	.8							.8	
TOTAL	51.5	39.7	7.8	.7	.1	.0	.0	100.0	.2

45. HOURS OF BAD OR MISSING DATA OR 2.2 PERCENT FOR 2068 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

SLIGHTLY STABLE STABILITY CLASS E
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND HP	TOTAL	AVG SPEED
N	3.5	2.9	.2	.0	.0	.0	.0	6.5	.2
NNE	5.2	3.1	.0	.0	.0	.0	.0	8.3	.2
NE	4.2	1.9	.0	.0	.0	.0	.0	6.2	.2
NNE	2.8	1.0	.0	.0	.0	.0	.0	3.9	.1
U E	3.4	4.9	.2	.0	.0	.0	.0	8.5	.3
I ESE	3.8	7.1	.4	.0	.0	.0	.0	11.4	.4
R SE	3.3	7.0	1.3	.0	.0	.0	.0	11.6	.5
W E SSE	2.3	5.0	1.0	.0	.0	.0	.0	8.4	.3
I C S	2.8	3.8	.3	.0	.0	.0	.0	6.9	.2
N T SSW	2.6	3.2	.2	.1	.0	.0	.0	6.2	.2
D I SW	1.9	2.6	.4	.0	.0	.0	.0	4.9	.2
U WSW	1.4	1.9	.0	.0	.0	.0	.0	3.4	.1
U W	1.3	1.2	.4	.0	.0	.0	.0	2.9	.1
W NW	1.3	1.1	.1	.0	.0	.0	.0	2.5	.1
NW	2.0	1.4	.1	.0	.0	.0	.0	3.6	.1
NNW	2.7	1.0	.2	.0	.0	.0	.0	3.9	.1
CALM	.8							.8	
TOTAL	45.4	49.3	5.0	.3	.0	.0	.0	100.0	.7

4. HOURS OF BAD OR MISSING DATA OR .2 PERCENT FOR 2483 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

MODERATELY STABLE STABILITY CLASS F
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	2.6	1.6	.0	.0	.0	.0	.0	4.1	.1
NNE	3.4	1.8	.0	.0	.0	.0	.0	5.2	.1
NE	2.7	2.2	.0	.0	.0	.0	.0	5.0	.1
ENE	2.6	2.7	.0	.0	.0	.0	.0	5.4	.2
E	4.6	7.1	.1	.1	.0	.0	.0	11.9	.4
ESE	4.4	11.5	.7	.0	.0	.0	.0	16.6	.6
SE	4.0	5.5	.2	.1	.0	.0	.0	9.8	.3
SSE	4.5	4.4	.3	.0	.0	.0	.0	9.2	.3
S	3.1	3.1	.1	.0	.0	.0	.0	6.3	.2
SSW	3.6	1.8	.0	.0	.0	.0	.0	5.4	.1
SW	2.6	2.0	.1	.0	.0	.0	.0	4.7	.1
WSW	2.6	1.1	.0	.0	.0	.0	.0	3.7	.1
W	2.3	1.0	.1	.0	.0	.0	.0	3.4	.1
WNW	2.6	.6	.2	.0	.0	.0	.0	3.3	.1
NW	1.4	.5	.0	.0	.0	.0	.0	1.9	.0
NNW	2.1	1.1	.0	.0	.0	.0	.0	3.1	.1
CALM	.9							.9	
TOTAL	49.9	48.1	1.7	.2	.0	.0	.0	100.0	.2

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 1209 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

EXTREMELY STABLE STABILITY CLASS G
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	4.6	.8	.1	.0	.0	.0	.0	5.5	.1
NNE	5.0	1.0	.1	.0	.0	.0	.0	6.1	.1
NE	4.7	2.7	.0	.0	.0	.0	.0	7.4	.2
EVE	4.2	3.3	.0	.0	.0	.0	.0	7.5	.2
D E	4.0	5.7	.1	.0	.0	.0	.0	9.8	.3
I ESE	6.7	5.8	.2	.0	.0	.0	.0	12.7	.4
K SE	5.6	4.7	.4	.0	.0	.0	.0	10.7	.3
W E SSE	4.6	2.7	.0	.0	.0	.0	.0	7.3	.2
I C S	4.3	2.3	.0	.0	.0	.0	.0	6.6	.2
N T SSW	5.1	2.1	.1	.0	.0	.0	.0	7.3	.2
D I SW	3.9	.4	.3	.0	.0	.0	.0	4.6	.1
U WSW	2.5	.4	.4	.0	.0	.0	.0	3.3	.1
H W	1.9	.4	.0	.0	.0	.0	.0	2.2	.0
WNW	1.5	.1	.0	.0	.0	.0	.0	1.6	.0
NW	1.5	.1	.0	.0	.0	.0	.0	1.6	.0
NNW	2.3	.2	.0	.0	.0	.0	.0	2.5	.0
CALM	3.2							3.2	
TOTAL	65.7	32.7	1.6	.0	.0	.0	.0	100.0	.2

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 1068 HOURS

TABLE 4B (cont'd)
Joint Frequency Distribution
10 Meter level

EXTREMELY UNSTABLE STABILITY CLASS A
PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	1.2	.0	.0	.0	.0	.0	.0	1.2	.0
NNE	.7	.0	.0	.0	.0	.0	.0	.7	.0
NE	.9	.0	.0	.0	.0	.0	.0	.9	.0
ENE	1.6	.0	.0	.0	.0	.0	.0	1.6	.0
E	1.1	.0	.0	.0	.0	.0	.0	1.1	.0
ESE	1.4	.0	.0	.0	.0	.0	.0	1.4	.0
SE	3.6	.8	.1	.0	.0	.0	.0	4.4	.1
SSE	5.2	1.9	.0	.0	.0	.0	.0	7.1	.2
S	7.2	2.2	.0	.0	.0	.0	.0	9.5	.2
SSW	13.1	1.7	.0	.0	.0	.0	.0	14.8	.3
SW	15.0	1.9	.0	.0	.0	.0	.0	16.9	.3
WSW	11.1	.5	.0	.0	.0	.0	.0	11.7	.2
W	7.5	.0	.1	.0	.0	.0	.0	7.6	.1
WNW	8.1	.2	.0	.0	.0	.0	.0	8.4	.1
W	6.1	.4	.0	.0	.0	.0	.0	6.6	.1
WNW	3.1	1.1	.0	.0	.0	.0	.0	4.2	.1
CALM	1.8							1.8	
TOTAL	89.0	10.8	.7	.0	.0	.0	.0	100.0	.1

4. HOURS OF BAD OR MISSING DATA JR .4 PERCENT FOR 901 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 10 Meter Level

MODERATELY UNSTABLE STABILITY CLASS B
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	2.9	.7	.0	.0	.0	.0	.0	3.6	.1
NNE	.7	.0	.0	.6	.0	.0	.0	.7	.0
NE	.7	.4	.0	.0	.0	.0	.0	1.1	.0
NNE	.7	.0	.0	.0	.0	.0	.0	.7	.3
N E	1.4	.4	.0	.0	.0	.0	.0	1.8	.0
ESE	1.8	.0	.0	.0	.0	.0	.0	1.8	.0
R SE	3.6	.7	.0	.0	.0	.0	.4	4.7	.2
W E SSE	7.7	3.6	.4	.0	.0	.0	.0	11.7	.3
I C S	6.2	4.4	.7	.0	.0	.0	.0	11.3	.4
N T SSW	8.0	1.4	.0	.0	.0	.0	.0	9.5	.2
D I SW	6.6	.7	.0	.0	.0	.0	.0	7.3	.1
W SW	4.7	.0	.0	.0	.0	.0	.0	4.7	.1
W	5.1	1.1	.0	.0	.0	.0	.4	6.6	.3
WNW	9.5	.0	.0	.0	.0	.0	.0	9.5	.1
NW	10.6	1.1	.0	.0	.0	.0	.0	11.7	.2
NNW	8.0	2.2	.0	.0	.0	.0	.0	10.2	.3
CALM	2.9							2.9	
TOTAL	81.4	16.8	1.1	.0	.0	.0	.7	100.0	.2

4. HOURS OF BAD OR MISSING DATA OR 1.4 PERCENT FOR 276 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 10 Meter Level

SLIGHTLY UNSTABLE STABILITY CLASS C
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	6.7	.7	.0	.0	.0	.0	.0	7.3	.1
NNE	3.0	1.0	.0	.0	.0	.0	.0	4.0	.1
N E	4.0	1.0	.0	.0	.0	.0	.0	5.0	.1
ENE	1.7	.3	.0	.0	.0	.0	.0	2.0	.0
E	1.7	.0	.0	.0	.0	.0	.0	1.7	.0
ESE	3.3	.0	.0	.0	.0	.0	.0	3.3	.0
SE	4.3	1.7	.0	.0	.0	.0	.0	6.0	.2
SSE	6.0	3.0	.3	.0	.0	.0	.0	9.4	.3
S	6.0	1.7	.0	.0	.0	.0	.0	7.7	.2
SSW	5.0	1.7	.0	.0	.0	.0	.0	6.7	.1
SW	3.7	.7	.0	.0	.0	.0	.0	4.3	.1
WSW	5.3	.0	.0	.0	.0	.0	.0	5.3	.1
W	4.3	.3	.0	.0	.0	.0	.0	4.7	.1
WNW	4.3	.3	.0	.0	.0	.0	.0	4.7	.1
NW	9.4	1.7	.0	.0	.0	.0	.0	11.0	.2
NNW	9.7	3.3	.0	.0	.0	.0	.0	13.0	.3
CALM	3.7							3.7	
TOTAL	82.3	17.4	.3	.0	.0	.0	.0	100.0	.1

6. HOURS OF BAD OR MISSING DATA OR 2.0 PERCENT FOR 305 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 10 Meter Level

NEUTRAL. STABILITY CLASS D
 PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	10.5	1.9	.0	.0	.0	.0	.0	12.3	.3
NNE	7.5	.6	.0	.0	.0	.0	.0	8.2	.1
NE	7.9	.7	.0	.0	.0	.0	.0	8.6	.1
ENE	5.4	.3	.0	.0	.0	.0	.0	5.7	.1
E	3.9	.0	.0	.0	.0	.0	.0	3.9	.1
ESE	4.7	.1	.0	.0	.0	.0	.0	4.8	.1
ESE	4.8	1.1	.0	.0	.0	.0	.0	6.0	.1
ESE	4.0	1.1	.3	.0	.0	.0	.0	5.3	.1
ESE	4.0	1.5	.1	.0	.0	.0	.0	5.7	.1
SSW	3.1	.3	.0	.0	.0	.0	.0	3.5	.1
SSW	2.4	.3	.0	.0	.0	.0	.0	2.7	.0
SSW	3.5	.1	.0	.0	.0	.0	.0	3.6	.0
SW	3.0	.3	.0	.0	.0	.0	.0	3.3	.1
SW	3.9	.3	.0	.0	.0	.0	.0	4.2	.1
SW	5.5	.7	.0	.0	.0	.0	.0	6.2	.1
SW	6.7	2.4	.1	.0	.0	.0	.0	9.2	.2
CALM	6.7							6.7	
TOTAL	87.7	11.7	.5	.0	.1	.0	.0	100.0	.1

81. HOURS OF BAD OR MISSING DATA OR 3.9 PERCENT FOR 2068 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 10 Meter Level

SLIGHTLY STABLE STABILITY CLASS E
 PERIOD OF RECORD: 01/01/83 0000 Hours 17/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	6.6	.2	.0	.0	.0	.0	.0	6.8	.1
NNE	6.9	.1	.0	.0	.0	.0	.0	7.0	.1
NE	6.9	.0	.0	.0	.0	.0	.0	7.0	.1
ENE	6.8	.0	.0	.0	.0	.0	.0	6.8	.1
D E	5.2	.0	.0	.0	.0	.0	.0	5.2	.1
I ESE	5.4	.2	.0	.0	.0	.0	.0	5.6	.1
R SE	6.6	.4	.0	.0	.0	.0	.0	7.0	.1
W E SSE	7.1	2.3	.0	.0	.0	.0	.0	9.5	.2
I C S	6.8	1.1	.0	.0	.0	.0	.0	7.9	.1
N T SSW	5.5	.4	.0	.0	.0	.0	.0	5.9	.1
D I SW	2.9	.1	.0	.0	.0	.0	.0	3.0	.0
O WSW	1.9	.0	.0	.0	.0	.0	.0	1.9	.0
H W	2.1	.0	.0	.0	.0	.0	.0	2.1	.0
WNW	2.3	.2	.0	.0	.0	.0	.0	2.5	.0
NW	2.9	.1	.0	.0	.0	.0	.0	3.0	.0
NNW	3.5	.3	.0	.0	.0	.0	.0	3.8	.1
CALM	14.9							14.9	
TOTAL	94.5	5.4	.1	.0	.0	.0	.0	100.0	.1

4. HOURS OF BAD OR MISSING DATA OR .2 PERCENT FOR 2483 HOURS

TABLE 4B (cont'd)
Joint Frequency Distribution
10 Meter Level

MODERATELY STABLE STABILITY CLASS F
PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	2.8	.0	.0	.0	.0	.0	.0	2.8	.0
NNE	5.0	.2	.0	.0	.0	.0	.0	5.1	.0
NE	10.2	.0	.0	.0	.0	.0	.0	10.2	.1
ENE	11.3	.0	.0	.0	.0	.0	.0	11.3	.1
E	8.5	.0	.0	.0	.0	.0	.0	8.5	.1
ESE	5.4	.0	.0	.0	.0	.0	.0	5.4	.0
SE	6.3	.1	.0	.0	.0	.0	.0	6.4	.1
SSE	4.0	.2	.0	.0	.0	.0	.0	4.3	.1
S	1.8	.2	.0	.0	.0	.0	.0	2.1	.0
SSW	1.7	.0	.0	.0	.0	.0	.0	1.7	.0
SW	2.0	.0	.0	.0	.0	.0	.0	2.0	.0
WSW	1.2	.1	.0	.0	.0	.0	.0	1.3	.0
W	.8	.0	.0	.0	.0	.0	.0	.8	.0
WNW	.7	.1	.0	.0	.0	.0	.0	.8	.0
NW	.9	.0	.0	.0	.0	.0	.0	.9	.0
NNW	2.5	.0	.0	.0	.0	.0	.0	2.5	.0
CALM	33.7							33.7	
TOTAL	99.1	.9	.0	.0	.0	.0	.0	100.0	.0

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 1209 HOURS

TABLE 4B (cont'd)
Joint Frequency Distribution
10 Meter Level

EXTREMELY STABLE PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours
STABILITY CLASS: G

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
U	.3	.0	.0	.0	.0	.0	.0	.3	.0
NNE	1.7	.1	.0	.0	.0	.0	.0	1.8	.0
N	8.6	.0	.0	.0	.0	.0	.0	8.6	.1
E	13.7	.0	.0	.0	.0	.0	.0	13.7	.1
ESE	9.8	.1	.0	.0	.0	.0	.0	9.9	.1
SE	5.7	.1	.0	.0	.0	.0	.0	5.8	.1
SSE	2.9	.1	.0	.0	.0	.0	.0	3.0	.0
S	.4	.1	.0	.0	.0	.0	.0	.5	.0
SSW	.2	.0	.0	.0	.0	.0	.0	.2	.0
SW	.7	.0	.0	.0	.0	.0	.0	.7	.0
WSW	1.0	.3	.0	.0	.0	.0	.0	1.3	.0
W	.5	.0	.0	.0	.0	.0	.0	.5	.0
WNW	.4	.0	.0	.0	.0	.0	.0	.4	.0
W	.3	.0	.0	.0	.0	.0	.0	.3	.0
WNW	.1	.0	.0	.0	.0	.0	.0	.1	.0
W	.5	.1	.0	.0	.0	.0	.0	.6	.0
CALM	52.4							52.4	
TOTAL	99.1	.8	.0	.0	.0	.0	.0	100.0	.1

0. HOURS OF BAD OR MISSING DATA OR .0 PERCENT FOR 1068 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 50 Meter Level

STABILITY CLASS A - C

PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	3.6	3.1	.4	.0	.0	.0	.0	7.2	.2
NNE	4.1	2.2	.1	.0	.0	.0	.0	6.4	.2
NE	3.9	2.4	.1	.0	.0	.0	.0	6.3	.2
ENE	2.9	1.8	.0	.0	.0	.0	.0	4.7	.1
E	3.3	4.0	.1	.0	.0	.0	.0	7.5	.2
ESE	4.0	5.6	.4	.1	.0	.0	.0	10.1	.3
ESE	3.7	4.4	.6	.1	.0	.0	.0	8.7	.3
E SSE	2.9	3.6	.5	.0	.0	.0	.0	7.1	.2
E S	2.7	2.8	.2	.0	.0	.0	.0	5.7	.2
E SSW	3.1	2.4	.4	.1	.0	.0	.0	5.9	.2
E SW	3.2	1.9	.4	.0	.0	.0	.0	5.6	.2
E WSW	2.9	1.6	.4	.0	.0	.0	.0	4.9	.1
E W	2.6	1.2	.3	.0	.0	.0	.0	4.2	.1
EW	2.5	1.2	.3	.0	.0	.0	.0	4.0	.1
EW	2.8	1.4	.2	.0	.0	.0	.0	4.4	.1
WNW	3.1	2.4	.5	.0	.0	.0	.0	6.2	.2
CALM	3.1							1.1	
TOTAL	52.5	42.0	4.9	.5	.0	.0	.0	100.0	.2

504. HOURS OF BAD OR MISSING DATA OR 5.8 PERCENT FOR 8759 HOURS

TABLE 4B (cont'd)
 Joint Frequency Distribution
 10 Meter Level

STABILITY CLASS A - G

PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

WIND SPEED (m/sec)

	0-2	3-5	6-8	9-11	12-14	15-17	18 AND UP	TOTAL	AVG SPEED
N	5.4	.6	.0	.0	.0	.0	.0	6.0	.1
NNE	5.1	.3	.0	.0	.0	.0	.0	5.3	.1
NE	6.9	.2	.0	.0	.0	.0	.0	7.1	.1
NNE	7.1	.1	.0	.0	.0	.0	.0	7.1	.1
DF	5.3	.0	.0	.0	.0	.0	.0	5.3	.1
ESE	4.6	.1	.0	.0	.0	.0	.0	4.7	.1
RSE	5.1	.6	.0	.0	.0	.0	.0	5.8	.1
WSE	4.8	1.4	.1	.0	.0	.0	.0	6.3	.1
ICS	4.5	1.2	.1	.0	.0	.0	.0	5.8	.1
NTSSW	4.7	.5	.0	.0	.0	.0	.0	5.2	.1
DISW	3.9	.4	.0	.0	.0	.0	.0	4.3	.1
UWSW	3.2	.1	.0	.0	.0	.0	.0	3.3	.0
W	2.6	.1	.0	.0	.0	.0	.0	2.8	.0
WNW	3.2	.2	.0	.0	.0	.0	.0	3.3	.0
W	3.7	.3	.0	.0	.0	.0	.0	4.1	.1
NNW	4.1	1.0	.0	.0	.0	.0	.0	5.1	.1
CALM	4.1							18.3	
<hr/>									
TOTAL	92.6	7.1	.2	.0	.0	.0	.0	100.0	.1

546. HOURS OF BAD OR MISSING DATA OR 6.2 PERCENT FOR 8759 HOURS

TABLE 4B (cont'd)

PERCENT BAD DATA REPORT

PERIOD OF RECORD: 01/01/83 0000 Hours 12/31/83 2400 Hours

REPORT COVERS 8759HOURS

	HOURS	PERCENT
50M DIRECTION	176.	2.01
50M WIND SPEED	223.	2.55
10M DIRECTION	161.	1.84
10M WIND SPEED	271.	3.09
TEMPERATURE	282.	3.22
DEW POINT	2775.	31.68
DELTA T	447.	5.10
PRECIPITATION	372.	4.25

TABLE 4C

Classification of Atmospheric Stability

Stability Classification	Pasquill Categories	σ_{θ} ^a (degrees)	Temperature Change with Height (C/10(m))
Extremely Unstable	A	25.0	-1.9
Moderately Unstable	B	20.0	-1.9 to -1.7
Slightly Unstable	C	15.0	-1.7 to -1.5
Neutral	D	10.0	-1.5 to -0.5
Slightly Stable	E	5.0	-0.5 to 1.5
Moderately Stable	F	2.5	1.5 to 4.0
Extremely Stable	G	1.7	4.0

^a Standard deviation of horizontal wind direction fluctuation over a period of 15 minutes to 1 hour. The values shown are average for each stability classification.

TABLE 5

Radioactive Liquid Waste Sampling and Analysis Program

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) ($\mu\text{Ci}/\text{ml}$)
A. Batch Waste Release Tanks ^c	P Each Batch	P Each Batch	Principal Gamma Emitters ^d	5×10^{-7}
			I-131	1×10^{-6}
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma emitters)	1×10^{-5}
			P Each Batch	M Composite ^b
	Gross Alpha	1×10^{-7}		
	P Each Batch	Q Composite ^b	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
	B. SSW Basin (prior to blowdown)	Each Blowdown	Each Batch	Principal Gamma Emitters ^d
I-131				1×10^{-6}

Note: Footnotes indicated are listed in GGNS Technical Specifications, Table 4.11.1.1.1-1

TABLE 6

Radioactive Gaseous Waste
Sampling and Analysis Program

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit Of Detection (LLD) (uCi/ml) ^a
A. Containment Ventilation Exhaust	M ^b Grab Sample	M ^b	Principal Gamma Emitters ^e	1x10 ⁻⁴
			H-3	1x10 ⁻⁶
B. Turbine Building Ventilation Exhaust	M ^b Grab Sample	M ^b	Principal Gamma Emitters ^e	1x10 ⁻⁴
			H-3	1x10 ⁻⁶
C. Offgas Post Treatment Exhaust, whenever there is flow	M Grab Sample	M	Principal Gamma Emitters ^e	1x10 ⁻⁴
D. (1) Radwaste Building Ventilation Exhaust	Continuous ^d	W ^c Charcoal Sample	I-131	1x10 ⁻¹²
			I-133	1x10 ⁻¹²
(2) Fuel Handling Area Ventilation Exhaust	Continuous ^d	W ^c Particulate Sample	Principal Gamma Emitters ^e (I-131, Others)	1x10 ⁻¹¹
(3) Containment Ventilation Exhaust	Continuous ^d	M Composite Particulate Sample	Gross Alpha	1x10 ⁻¹¹
(4) Turbine Building Ventilation Exhaust	Continuous ^d	Q Composite Particulate Sample	Sr-89, Sr-90	1x10 ⁻¹¹
	Continuous ^f	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1x10 ⁻⁶

Note: Footnotes indicated are listed in GGNS Technical Specifications, Table 4.11.2.1.2-1



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

February 29, 1984

NUCLEAR PRODUCTION DEPARTMENT

U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N. W., Suite 2900
Atlanta, Georgia 30303

Attention: Mr. J. P. O'Reilly
Regional Administrator

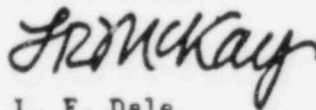
Dear Mr. O'Reilly:

SUBJECT: Grand Gulf Nuclear Station.
Unit 1
License No. NPF-13
Docket No. 50-416
File: 0292/15319
Semiannual Radioactive
Effluent Release Report
AECM-84/0150

Enclosed is Mississippi Power & Light (MP&L) Company's Semiannual Radioactive Effluent Release Report for Grand Gulf Nuclear Station (GGNS) for the period July 1, 1983, to December 31, 1983.

Questions concerning this report should be referred to Dr. L. R. McKay at (601) 969-2432.

Yours truly,

for 
I. F. Dale
Manager of Nuclear Services

GOS/LRM:aly

Enclosure

cc: Mr. J. B. Richard (w/o)
Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. B. Taylor (w/o)

Mr. Richard C. DeYoung, Director (w/a)
U. S. Regulatory Commission
Washington, D. C. 20555

LEES
11

bcc: Mr. A. Zaccaria (w/o)
Mr. R. W. Jackson (w/a)
Mr. R. D. Couse (w/o)
Mr. J. F. Hudson, Jr. (w/o)
Mr. J. P. McGaughy (w/o)
Mr. T. H. Cloninger (w/a)
Mr. T. E. Reaves (w/o)
Mr. J. E. Cross (w/a)
Mr. S. M. Feith (w/a)
Mr. A. R. Smith (w/o)
Mr. A. G. Wagner (w/a)
Mr. C. C. Hayes (w/a)
Mr. M. D. Houston (w/a)
Mr. J. F. Pinto (w/a)
Mr. M. D. Archdeacon (w/o)
Mr. W. E. Edge (w/2)
Mr. A. S. McCurdy (w/o)
Mr. P. J. Richardson (w/a)
Mr. P. R. Hughes (w/a)
Mr. J. G. Cesare (w/a)
Dr. L. R. McKay (w/a)
Mr. G. O. Smith (w/a)
Mr. J. D. Barlow (w/a)
Mr. J. E. Wallace (w/a)
Ms. R. R. Jackson (w/a)
SRC Secretary (w/a)
MSS Nuclear Activities (w/a)
File (LCTS) (w/2)
File (Plant) (w/a)
File (Project) (w/a) [67]