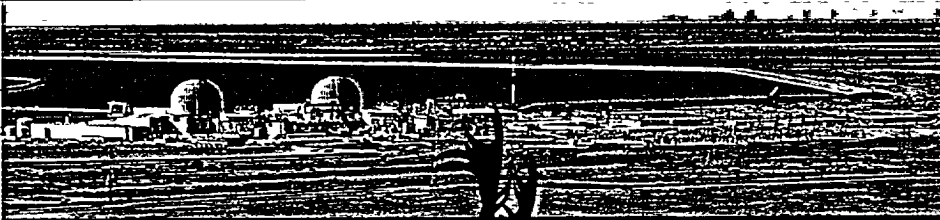


# Radioactive Effluent Release

2  
0  
0  
2



Report





South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483


February 27, 2003  
NOC-AE-03001479  
10CFR50.36a  
STI: 31567953

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

South Texas Project  
Units 1 & 2  
Docket Nos. STN 50-498 & 50-499  
Radioactive Effluent Release Report for 2002

Pursuant to the South Texas Project Technical Specification 6.9.1.4 and 10CFR50.36a, attached is the Radioactive Effluent Release Report for 2002. The report covers the period from January 1, 2002 to December 31, 2002.

If you have any questions on this matter, please contact Mr. K. W. Reynolds at (361) 972-3611 extension 6678 or me at (361) 972-7879.

  
R. A. Gangluff  
Manager, Chemistry

MKJ/

Attachments: 1) Radioactive Effluent Release Report for 2002

IE48

cc:  
(paper copy)

Ellis W. Merschoff  
Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, Texas 76011-8064

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

Richard A. Ratliff  
Bureau of Radiation Control  
Texas Department of Health  
1100 West 49th Street  
Austin, TX 78756-3189

Cornelius F. O'Keefe  
U. S. Nuclear Regulatory Commission  
P. O. Box 289, Mail Code: MN116  
Wadsworth, TX 77483

C. M. Canady  
City of Austin  
Electric Utility Department  
721 Barton Springs Road  
Austin, TX 78704

(electronic copy)

A. H. Gutterman, Esquire  
Morgan, Lewis & Bockius LLP

L. D. Blaylock/W. C. Gunst  
City Public Service

Mohan C. Thadani  
U. S. Nuclear Regulatory Commission

R. L. Balcom  
Texas Genco, LP

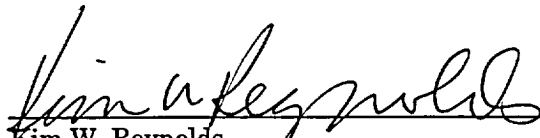
A. Ramirez  
City of Austin

C. A. Johnson  
AEP Texas Central Company


Jon C. Wood  
Matthews & Branscomb

Completed by  
Generation Department  
in accordance with  
Technical Specifications  
for  
United States Nuclear Regulatory Commission  
License Nos.  
NPF-76 & NPF-80  
February 2003

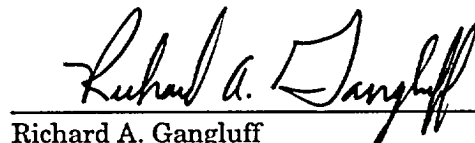
Authored by:

  
\_\_\_\_\_  
Kim W. Reynolds  
Staff Nuclear Chemist  
Chemistry Division

Technical Review:

  
\_\_\_\_\_  
Gordon E. Williams, CHP  
Health Physicist  
Health Physics Division

Approved by:

  
\_\_\_\_\_  
Richard A. Gangluff  
Manager  
Chemistry Division

**2002**  
**Radioactive Effluent**  
**Release Report**

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION**

## TABLE OF CONTENTS

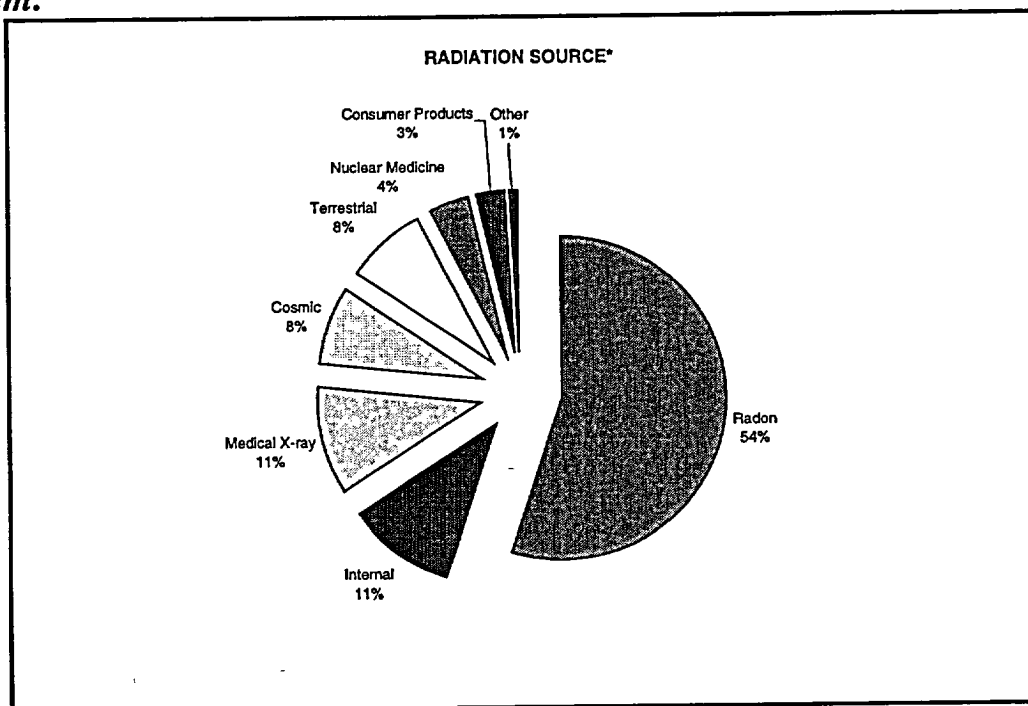
	<u>PAGE</u>
 <b><i>SUMMARY TAB</i></b>	
Summary and Introduction.....	1-1
 <b><i>EFFLUENT PROGRAM TAB</i></b>	
Supplemental Information for Effluent and Waste Disposal.....	2-1
Regulatory Limits	
Effluent Concentrations Limits	
Average Energy (Million Electron Volts/Disintegration)	
Measurement and Approximations of Total Activity	
Batch Releases	
Abnormal (Unplanned) Releases	
Estimate of Total Error	
Solid Waste Shipments	
Radiological Impact on Man	
Meteorological Data	
Lower Limit of Detection	
Dose to Members of the Public	
Technical Specifications and Offsite Dose Calculation Manual Controls Reporting Requirements.....	3-1
Offsite Dose Calculation Manual Changes	
Annual Land Use Census	
Radioactive Waste Treatment System Design Modification Description	
Inoperable Effluent Monitoring Instrumentation Explanation	
Gas Storage Tank Curie Limit Violation Description	
Unprotected Outdoor Tank Curie Limit Violation Description	
Abnormal (Unplanned) Release Description	
Radioactive Waste Process Control Program Changes	
 <b><i>RADIOACTIVE DATA TAB</i></b>	
Gaseous Effluents.....	4-1
Revised Gaseous Effluents Summations .....	4.1-1
Liquid Effluents.....	5-1
Solid Waste and Irradiated Fuel Shipments.....	6-1

# TABLE OF CONTENTS

	<u>PAGE</u>
<b><i>DOSE DATA TAB</i></b>	
Dose Accumulations .....	7-1
Results of the Protected Area Direct Radiation Measurement Program.....	8-1
<b><i>METEOROLOGICAL DATA TAB</i></b>	
Joint Frequency Tables.....	9-1
Joint Frequency Tables for First Quarter	
Joint Frequency Tables for Second Quarter	
Joint Frequency Tables for Third Quarter	
Joint Frequency Tables for Fourth Quarter	
Joint Frequency Tables for Second Quarter Batch Release	
Joint Frequency Tables for Third Quarter Batch Release	
Joint Frequency Tables for Fourth Quarter Batch Release	

## Report Summary

*During 2002, as in all previous years, operation of the South Texas Project created no adverse effects or health risks. The maximum radiation exposure calculated for a hypothetical person living at the boundary of the South Texas Project during 2002 due to operation of the South Texas Project was less than one millirem. For reference, this dose may be compared to the average annual radiation exposure of 360 millirem to people in the United States from all sources. Natural radiation sources in the environment contribute most of the radiation exposure to people; nuclear power operations contribute less than one millirem.*



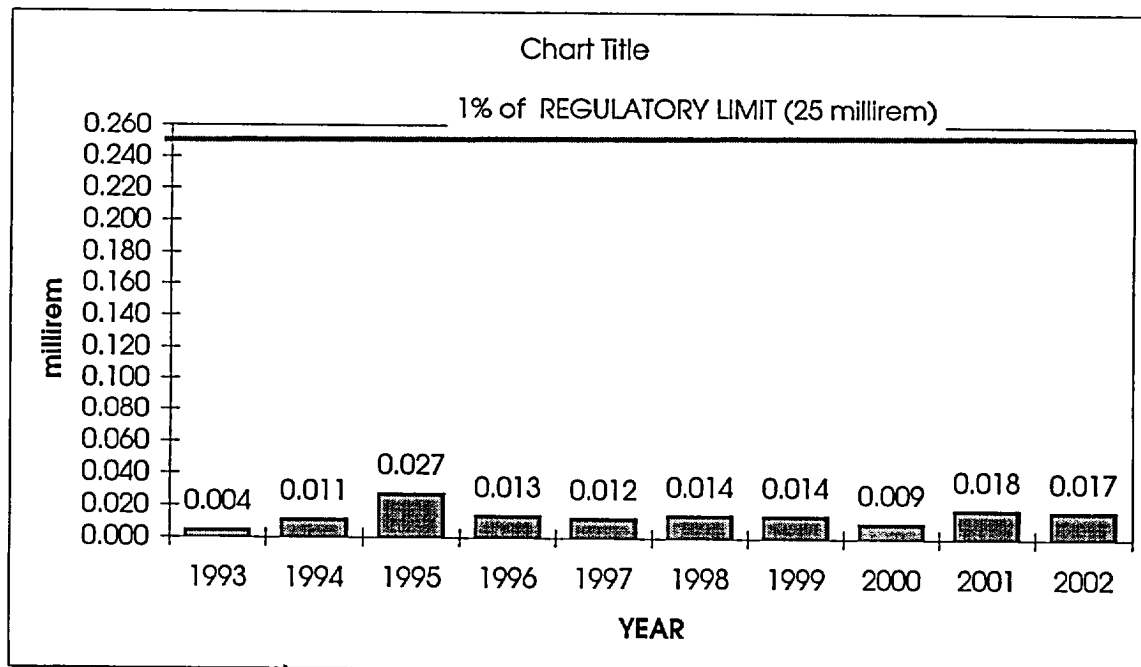
\*NCRP (1987). National Council on Radiation Protection and Measurements, *Ionizing Radiation Exposure of the Population of the United States*, (Bethesda, Maryland), NCRP Report No. 93.

During 2002, the total body dose to the most exposed individual from radioactive effluents and direct radiation was 0.017 millirem. This total represents approximately 0.07% of the limits of 40 C.F.R. §190. This theoretical individual, an adult, resides in the West by South-West Sector, approximately 4,000 meters (2.5 miles) from the site. For dose calculation purposes, this theoretical individual is characterized as the most exposed with regard to food consumption, occupancy, and other uses of the areas in the plant vicinity. This theoretical individual is not a

real person and the dose model assumes that this theoretical individual may consume the maximum amount of food with all the food being grown or grazed at the residence. This theoretical individual receives shoreline exposure from Little Robbins Slough for 12 hours per year and consumes 21 kilograms (48 pounds) of fish taken from Little Robbins Slough. This theoretical individual receives a submersion dose from noble gases and dose from inhaled radioactive particulates, radioiodines, and tritium. This adult consumes 64 kilograms (150 pounds) of vegetables grown at the residence and consumes 110 kilograms (250 pounds) of meat from livestock grazed at the residence.

Releases to the environment at the South Texas Project Electric Generating Station have historically been and continue to be well below regulatory limits as shown in the following table. Members of the public received negligible additional radiation due to the operation of the South Texas Project. This Radioactive Effluent Release Report summarizes the data describing the radioactive liquid and gaseous releases from the South Texas Project Electric Generating Station during 2002. The radioactive effluents from the South Texas Project are effectively monitored and controlled in accordance with regulatory requirements.

#### THEORETICAL TOTAL BODY DOSE FOR ALL PATHWAYS



Liquid and gaseous discharges from the South Texas Project are continuously monitored for radioactive content. Samples are also collected from ventilation systems and liquid discharges and analyzed for radioactivity. The sample and analysis methods are verified and augmented using an environmental laboratory. Radioactivity monitors continuously sample the ventilation exhaust systems. On the liquid discharge lines, radioactivity monitors automatically divert or isolate liquid effluents if the radioactivity is higher than expected. These monitors are also equipped with remote alarm indications in the control rooms and health physics offices.



The radiation monitors, and the sampling and analysis program, provide an accurate determination of the type and quantity of radioactive materials released in plant effluents. Liquid effluents are directed to the Main Cooling Reservoir that is located entirely within the site boundary. The South Texas Project continues to aggressively pursue the reduction of radioactive material in liquid effluents consistent with prudent industry practices.

Each year, the effluent monitoring results are summarized in this report and a hypothetical radiation dose to the population in the surrounding area is calculated based on gaseous radioactive effluents, meteorological conditions and liquid radioactive effluents. The hypothetical dose assumes all credible paths for radioactivity to reach a member of the public, such as consumption of vegetables from a garden, fish from the river, inhalation, and direct exposure. The highest potential hypothetical dose to an individual at the site boundary was calculated to be less than 1 millirem which is significantly less than an average person receives from natural sources annually. The information presented in this report demonstrates that plant operation is consistently controlled to ensure that radioactive effluents remain below regulatory limits and to ensure protection of the public and the environment.

## INTRODUCTION

This Radioactive Effluent Release Report is submitted for the period January 1, 2002, through December 31, 2002, in accordance with Appendix A of License Nos. NPF-76 and NPF-80, Technical Specifications and the Offsite Dose Calculation Manual.

A single submittal is made for both units combining those sections that are common. Separate tables of releases and release totals are included where separate processing systems exist.

This report includes an annual summary of hourly meteorological measurements taken during each quarter. This data appears as tables of wind direction and wind speed by atmospheric stability class. All assessments of radiation doses are performed in accordance with the Offsite Dose Calculation Manual.

Minimal quantities of radioactivity were released during 2002. Liquid effluents are discharged to the on-site Main Cooling Reservoir and subsequently released offsite. The radioactivity released in liquids beyond the site boundary was estimated using the South Texas Project Electric Generating Station Offsite Dose Calculation Manual. Solid radioactive waste is shipped offsite for disposal. The following table is a brief summary of the radioactive effluents and solid waste attributable to the station.

TYPE OF RADIOACTIVE MATERIAL	EFFLUENT TYPE	DESTINATION	VOLUME CUBIC METER	CURIES
NOBLE GAS	GAS	OFFSITE	6.0E+09	4.0E+2
PARTICULATE AND IODINES	GAS	OFFSITE	6.0E+09	4.3E-03
TRITIUM	GAS	OFFSITE	6.0E+09	6.9E+01
TRITIUM	LIQUID	OFFSITE	4.8E+06	3.4E+02
FISSION AND ACTIVATION PRODUCTS	LIQUID	OFFSITE	4.8E+06	8.8E-04
TRITIUM	LIQUID	ON-SITE	2.8E+04	2.6E+03
FISSION AND ACTIVATION PRODUCTS <sup>(1)</sup>	LIQUID	ON-SITE	2.8E+04	1.7E-01
SPENT RESINS AND FILTERS	SOLID	FOR BURIAL	4.9E+00	4.4E+02
DRY COMPRESSIBLE WASTE	SOLID	FOR BURIAL	1.3E+01	6.0E-01
OTHER WASTE (SECONDARY RESIN, CHARCOAL, AND FILTER CAKE)	SOLID	FOR BURIAL	9.4E+01	2.0E-04

<sup>(1)</sup>Excludes 0.9 curies of dissolved and entrained gases.

Tritium was the largest contributor to the offsite doses from radioactive effluents both liquid and gaseous. The offsite doses are well below any regulatory limit and significantly less than the average annual radiation exposure to people in the United States from all sources (360 millirem).

**Supplemental Information for Effluent and Waste Disposal**

## Supplemental Information for Effluent and Waste Disposal

The South Texas Project Electric Generating Station is located on 49,800,000 square meters (12,300 acres) in Matagorda County, Texas, approximately 24,000 meters (15 miles) southwest of Bay City along the west bank of the Colorado River. The South Texas Project is jointly owned by Texas Genco LP formerly Reliant Energy HL&P, AEP Texas Central Company formerly Central Power & Light Company, the City of Austin, and the City of San Antonio. Until late 1997, Reliant Energy HL&P was the designated licensee for the owners. On November 14, 1997, the station owners changed the licensee to STP Nuclear Operating Company, which is responsible for implementation of the Radioactive Effluent Control Program.

The South Texas Project Electric Generating Station consists of two 1,250 megawatt-electric Westinghouse pressurized water reactors. The thermal output was up-rated by 1.4 percent increasing the electrical output. Unit 1 received a low-power testing license on August 21, 1987, obtained initial criticality on March 8, 1988, and was declared commercially operational on August 25, 1988. Unit 2 received a low-power testing license on December 16, 1988, obtained initial criticality on March 12, 1989, and was declared commercially operational on June 19, 1989. Both units together produce enough electricity to serve over one million homes.

## Regulatory Limits

### Fission and Activation Gases

The air dose due to noble gases released in gaseous effluents from each unit to areas at and beyond the Site Boundary shall be limited to the following:

During any calendar quarter: Less than or equal to 5 millirads for gamma radiation and less than or equal to 10 millirads for beta radiation, and

During any calendar year: Less than or equal to 10 millirads for gamma radiation and less than or equal to 20 millirads for beta radiation.

### Iodines and Particulates, Half-Lives > 8 days

The dose to a Member of the Public from Iodine-131, Iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released, from each unit, to areas at and beyond the Site Boundary shall be limited to the following:

During any calendar quarter: Less than or equal to 7.5 millirems to any organ; and

During any calendar year: Less than or equal to 15 millirems to any organ.

### Liquid Effluents

The dose or dose commitment to a Member of the Public from radioactive materials in liquid effluents released from each unit to Unrestricted Areas shall be limited to:

During any calendar quarter: Less than or equal to 1.5 millirems to the whole body and to less than or equal to 5 millirems to any organ; and

During any calendar year: Less than or equal to 3 millirems to the whole body and to less than or equal to 10 millirems to any organ.

**Effluent Concentrations Limits**

**Gaseous Effluents**

The **dose rate** due to radioactive materials released in gaseous effluents from the site to areas at and beyond the Site Boundary shall be limited to the following:

For noble gases: Less than or equal to 500 millirems/year to the whole body and less than or equal to 3000 millirems/year to the skin; and

For Iodine-131, Iodine-133, tritium and all radionuclides in particulate form with half-lives greater than eight days: Less than or equal to 1500 millirems/year to any organ.

**Liquid Effluents**

The concentration of radioactive material released in liquid effluents to Unrestricted Areas shall be limited to 10 times the concentrations specified in 10CFR, Part 20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcurie/milliliter total activity.

**Average Energy (Million Electron Volts/Disintegration)**

The **Average Energy** (or E-bar) shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration for the isotopes other than Iodines, with half-lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant. The following average energy values are based on grab sample analyses from each reactor coolant systems with both samples being collected during September of 2002.

E-bar (Million Electron Volts/Disintegration)	<u>0.171</u> *	Unit 1
	<u>0.644</u> *	Unit 2

\* Includes tritium

The average energy (E-bar) values of the radionuclide mixture in gaseous releases of fission and activation gases are based on noble gases released during the reporting period.

E-bar (Million Electron Volts/Disintegration)	<u>0.193</u>	Unit 1
	<u>0.240</u>	Unit 2

## Measurement and Approximations of Total Activity

The following discussions detail the methods used to measure and approximate total activity for the following:

Gaseous Effluents: Fission and Activation Gases, Iodines and Particulates  
Liquid Effluents

Tables A3-1 and A4-1 of the South Texas Project Electric Generating Station Offsite Dose Calculation Manual give sampling frequencies and lower limit of detection requirements for the analysis of liquid and gaseous effluent streams.

### Gaseous Effluents

#### Analytical Methods For Batch Gaseous Releases

Monthly pre-release grab samples are collected from the plant Reactor Containment Building atmosphere. These samples are analyzed on a Gamma Spectroscopy System utilizing high purity germanium detectors for noble gas, iodine and particulate activity. Tritium specific radioactivities are measured using Liquid Scintillation Counting techniques.

The radionuclide concentrations obtained are used in conjunction with the gross noble gas release rate monitoring data collected by the radiation monitoring system to estimate the release rate of each radionuclide in the effluent streams. The noble gas release rate data collected by the unit vent radiation monitor is quantified and reported as continuous mode of release. The data from the unit vent radiation monitor in conjunction with the grab sample results of the Reactor Containment Building atmosphere are used to quantify the radioactivity released.

#### Analytical Methods For Continuous Gaseous Releases

Periodic noble gas and tritium grab samples are taken from the continuous release points such as the Unit Vent. Secondary liquid grab samples in conjunction with the mass of the secondary coolant lost are used for quantifying secondary steam releases. Continuous sampling for particulates and iodine is also performed on the effluent streams. These samples are analyzed for tritium and gamma radionuclides, as described above for batch releases. Strontium-89, Strontium-90, and gross alpha analyses were performed by the on-site Radiological Services Laboratory.

Using noble gas grab sample results and the gross noble gas release rate monitor, the noble gases in effluent streams are quantified by the plant radiation monitoring system.

### Liquid Effluents

#### Analytical Methods For Liquid Releases

Liquid batch releases include waste liquid treated by the liquid waste processing system and secondary regenerative waste. Liquid effluents resulting from primary to secondary leakage

or other plant operations are continuously monitored and are tracked as continuous releases. For batch releases, representative pre-release grab samples are taken and analyzed in accordance with Table A3-1 of the Offsite Dose Calculation Manual. For continuous releases, representative samples are collected weekly and analyzed. Radionuclide analyses are performed using a Gamma Spectroscopy System. Aliquots of each pre-release batch sample and of representative samples for continuous releases are composited in accordance with the requirements in Table A3-1 of the Offsite Dose Calculation Manual. Tritium concentrations are determined using Liquid Scintillation Counting techniques. Dissolved and entrained gas concentrations are determined by counting grab samples on the Gamma Spectroscopy System. Strontium-89, Strontium-90, gross alpha, and Iron-55 determinations are performed by the on-site Radiological Services Laboratory. The radionuclide concentrations obtained are used with the total volume for each batch release.

### Batch Releases

Liquid and gaseous summaries are compiled from permits generated using a computer-based effluent management system and plant procedures. Liquid batch releases are accounted for by individual permits. Gaseous batch releases are accounted for by monthly permits and consist of reactor containment purges for the purpose of reducing radioactivity concentrations. Batch times represent the actual period of releases and the periods that the purge valves were open.

### Liquid (Unit 1)

<b>Liquid (Unit 1)</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>
a. Number of batch releases	12	19	29	44
b. Total time period for batch releases (minutes)	777	1244	1934	2781
c. Maximum time period for a batch release (minutes)	73	71	71	71
d. Average time period for batch releases (minutes)	65	65	67	63
e. Minimum time period for a batch release (minutes)	47	44	48	46



Gaseous (Unit 1)

Gaseous (Unit 1)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
a. Number of batch releases	0	0	1	0
b. Total time period for batch releases (minutes)	0	0	120	0
c. Maximum time period for a batch release (minutes)	0	0	120	0
d. Average time period for batch releases (minutes)	0	0	120	0
e. Minimum time period for a batch release (minutes)	0	0	120	0

Liquid (Unit 2)

Liquid (Unit 2)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
a. Number of batch releases	10	39	27	44
b. Total time period for batch releases (minutes)	624	2420	1710	2540
c. Maximum time period for a batch release (minutes)	65	65	69	65
d. Average time period for batch releases (minutes)	62	62	63	58
e. Minimum time period for a batch release (minutes)	59	47	45	42

Gaseous (Unit 2)

Gaseous (Unit 2)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
a. Number of batch releases	0	1	3	18
b. Total time period for batch releases (minutes)	0	120	720	93360
c. Maximum time period for a batch release (minutes)	0	120	240	42480
d. Average time period for batch releases (minutes)	0	120	240	5187
e. Minimum time period for a batch release (minutes)	0	120	240	120

Abnormal (Unplanned) Releases

No abnormal releases occurred during this reporting period.

## Estimate of Total Error

### Estimate of Error for Liquid Effluents

The **maximum error** associated with volume and flow measurements, based upon plant calibration practice, is estimated to be  $\pm 1.27\%$ . The error associated with the flow measurement is small in relation to the counting uncertainty of the radionuclide concentration analysis.

The **average uncertainty** associated with counting measurements is 10% or less at the 95% confidence level.

The **error** associated with dilution volume is estimated to be  $\pm 10\%$ .

### Estimate of Error for Gaseous Effluents

The **maximum error** associated with monitor readings, sample flow, vent flow, sample collection, monitor calibration and laboratory procedures are collectively estimated to be:

Fission and Activation Gases Low Activity (less than 10 microcurie per second)	$\pm 100\%$
Fission and Activation Gases High Activity (greater than or equal to 10 microcurie per second)	$\pm 20\%$
Iodines	$\pm 25\%$
Particulates	$\pm 25\%$
Tritium	$\pm 50\%$

The **average uncertainty** associated with counting measurements is 10% or less at the 95% confidence level for fission and activation gases, iodines, particulates and tritium.

### Estimate of Error for Solid Radioactive Waste

The **error** associated in determining the volume of solid radioactive waste shipments is estimated to be  $\pm 1\%$ . The **error** associated in determining the filter media, spent primary resins, and spent secondary resins radioactivity is estimated to be within a factor of two of the real value and is due primarily to waste stream sampling uncertainty. The **error** associated in determining the radioactivity of other solid radioactive waste shipments is estimated to be within a factor of three of the real value.

## Solid Waste Shipments

A total of twenty-five shipments of radioactive filter media, spent resins, dry active and other wastes were made during the reporting period. A summary of the data is provided in the Section 6, Solid Waste and Irradiated Fuel Shipments.

## Radiological Impact on Man

The data for the period January 1, 2002, through December 31, 2002, is provided in the Dose Accumulation (Section 7) and the Summary of Direct Radiation Table 8-1 (Section 8). The following dilution factors and dilution water flows were used for assessing the radiation doses due to radioactive liquid effluents released to unrestricted areas.

Receptor Location	ODCM <sup>(1)</sup> Dilution Factor	Dilution Water Flow Cubic Feet/Second	Dilution Water Flow Liters/Year	Dilution Water Flow Liters/Quarter
Colorado River	1.00E+00	6.00E+02	5.36E+11	1.34E+11
Matagorda Bay	1.63E+02	9.78E+04	8.73E+13	2.18E+13
Little Robbins Slough Area	3.05E-02	1.83E+01	1.63E+10	4.08E+09

<sup>(1)</sup> Offsite Dose Calculation Manual factor

The dilution water flow used to estimate the individual dose due to ingestion of saltwater fish and saltwater invertebrates (shrimp) harvested from the Colorado River was 5.36E+11 liters per year for the years of 1989 through 2002. The dilution water flow used to estimate the individual dose due to ingestion of saltwater fish and saltwater invertebrates harvested from the Matagorda Bay was 8.73E+13 liters per year for the years of 1993 through 2002 as the result of a diversion channel that routes the Colorado River into Matagorda Bay. The dilution water flow used to estimate the individual dose due to ingestion of freshwater fish from the Little Robbins Slough Area was 1.63E+10 liters per year for the years 1989 through 2002. These dilution water flows were also used for estimating individual dose due to shoreline deposits. The radioactivity reported in the Liquid Effluent tables is the amount released to the Main Cooling Reservoir and does not contribute to dose until the radioactivity is released to unrestricted areas. In order to estimate the doses due to liquid effluents, the radioactivity reported must be adjusted by the values listed in the Offsite Dose Calculation Manual, Table B4-1, "Radionuclide Fraction Leaving STPEGS Via Liquid Routes".

## Meteorological Data

The 2002 meteorological data is presented in the form of joint frequency tables. Each quarter contains eight tables, one for each stability class and one for all classes combined.

A second set of joint frequency tables is provided for time periods when the reactor containment building fans were operating to remove radioactivity from the containment for personnel protection reasons. These containment purges are classified as batch releases. No batches are reported for the first quarter since no containment purges were performed.

## Lower Limit of Detection

The **Lower Limit of Detection** (an a priori limit) is defined as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability, and only a 5% probability of falsely concluding that a blank

observation represents a "real" signal. A zero (0) value in the attached tables indicates no activity detected.

## Dose to Member of the Public

### Dose to Member of the Public from Direct Radiation Outside the Site Boundary

The Offsite Dose Calculation Manual includes the direct radiation from plant structures as a component to the dose to a hypothetical, highest exposed Member of the Public located off site due to plant operations. The only source of plant related direct radiation in 2002 originated from radioactive waste storage tanks south of Units 1 and 2 and the movement of radioactive waste in the same area.

The Offsite Dose Calculation Manual allows measurements made near the plant structures to be used in these calculations following suitable adjustments for distance and exposure time. In 2002, Thermoluminescent Dosimeters were placed along the protected area fence surrounding Units 1 and 2 of the South Texas Project as pictured in Figure 8-1 of Section 8. The results of these measurements are summarized in Table 8-1 of Section 8. The table shows that in 2002 only two Thermoluminescent Dosimeter stations measured more exposure than typical of natural background determined prior to operation in the vicinity of the South Texas Project. These two stations were both located south of the units where the reservoir shields off site members of the public. Hence no dose due to direct radiation in 2002 was delivered to a Member of the Public located off site.

### Dose to Member of the Public from Direct Radiation Inside the Site Boundary

A hypothetical Member of the Public inside the site boundary but outside the protected area fence could receive approximately 1.28 millirem from direct radiation if they spent 2000 hours a year near the protected area fence south of Unit 2. This value assumes that a site worker meeting the definition of a Member of the Public spent 2000 hours of the year near Station #7 (see Figure 8-1 of Section 8) where the direct radiation exposure rate was 0.00064 mR/hr.

### Dose to Member of the Public from Radioactive Effluents Outside the Site Boundary

During 2002, the total body dose to the most exposed individual from radioactive effluents and direct radiation was 0.017 millirem. This total represents approximately 0.07% of the limits of 40 C.F.R. §190. This theoretical individual, an adult, resides in the West by South-West Sector, approximately 4,000 meters (2.5 miles) from the site. For dose calculation purposes, this theoretical individual is characterized as the most exposed with regard to food consumption, occupancy, and other uses of the areas in the plant vicinity. This theoretical individual is not a real person and the dose model assumes that this theoretical individual may consume the maximum amount of food with all the food being grown or grazed at the residence. This theoretical individual receives shoreline exposure from Little Robbins Slough for 12 hours per year and consumes 21 kilograms (48 pounds) of fish taken from Little Robbins Slough. This theoretical individual receives a submersion dose from noble gases and dose from inhaled radioactive particulates, radioiodines, and tritium. This adult

consumes 64 kilograms (150 pounds) of vegetables grown at the residence and consumes 110 kilograms (250 pounds) of meat from livestock grazed at the residence.

Dose to Member of the Public from Direct Radiation and Radioactive Effluents Inside the Site Boundary

A hypothetical Member of the Public outside the protected area fence but inside the site boundary could receive approximately 0.17 millirem from radioactive effluents due to inhalation and immersion. This dose plus the direct radiation dose would yield 1.5 millirem, a small fraction of 10 C.F.R. §20.1301 annual limit.

Sewage Sludge Land Farming

Sewage sludge removed from the West Sanitary Waste Treatment System was beneficially land applied onsite during April 2002. This beneficial land application is not a radioactive effluent and is only reported to document this activity. The amount of radioactivity contained in the sludge was approximately 54 microcuries. This radioactivity includes nuclides of Cobalt-57, Cobalt-58, Cobalt-60 and tritium. In accordance with Texas Natural Resource Conservation Commission Registration No. 710645, the sludge is incorporated into the soil after application. A soil sample collected from the area in December 2002 indicated no activity above background, confirming that the concentration in the soil is below the limits established in Title 25 of the Texas Administrative Code Section 289.202 (ddd).

**Technical Specifications and Offsite Dose Calculation Manual  
Controls Reporting Requirements**

**Offsite Dose Calculation Manual Changes (reference, Technical Specifications, 6.13)**

There were no changes to the Offsite Dose Calculation Manual during this reporting period.

**Annual Land Use Census (reference, Offsite Dose Calculation Manual Controls, 3.12.2.a)**

The Land Use Census did not identify any new locations for dose calculations.

**Radioactive Waste Treatment System Design Modification Description (reference, Offsite Dose Calculation Manual Controls, 6.15)**

No major design modifications were made to the gaseous, liquid, or solid radioactive waste treatment systems during this reporting period.

**Inoperable Effluent Monitoring Instrumentation Explanation (reference, Offsite Dose Calculation Manual Controls, 6.9.1.4)**

For 2002, inoperable liquid effluent monitoring instruments were corrected within the time specified in Sections 3.3.3.10 of Offsite Dose Calculation Manual Controls.

For 2002, inoperable gaseous effluent monitoring instruments were corrected within the time specified in Sections 3.3.3.11 of Offsite Dose Calculation Manual Controls.

The requirements of ODCM Action 49 were not met during one instance that the gaseous effluent monitoring instrument was not operable. ODCM Controls 3.3.3.11 lists the requirements for radioactive gaseous effluent monitoring instrumentation channels and the required actions to be taken during periods that the monitor is not operable. Action 49 requires noble gas grab samples be collected and analyzed once per 12 hours. The noble gas activity monitor was declared inoperable on 02/13/2002 13:20 and the first noble gas grab sample was collected on 02/14/2002 02:24. The requirements of Action 49 were not met. Other ventilation noble gas monitor hourly radioactivity trends were reviewed that bracketed this event. All radioactivity trends were within the expected ranges. These radioactivity trends indicated that noble gases were not released from the unit vent during the period that the monitor was inoperable. This event was documented by condition report 02-2460.

**Gas Storage Tank Curie Limit Violation Description (reference, Offsite Dose Calculation Manual Controls, 6.9.1.4)**

The Reactor Coolant System Vacuum Degassing System was not used during this reporting period. Therefore, the quantity of radioactive material in the Reactor Coolant System Vacuum Degassing System Storage Tanks did not exceed the limits set forth in Section 3.11.2.6 of Technical Specifications.

**Unprotected Outdoor Tank Curie Limit Violation Description (reference, Offsite Dose Calculation Manual Controls, 6.9.1.4)**

There are no Unprotected Outdoor Tanks at South Texas Project Electric Generating Station.

**Abnormal (Unplanned) Release Description (reference, Offsite Dose Calculation Manual, 6.9.1.4)**

No abnormal (unplanned) releases occurred during this reporting period.

**Radioactive Waste Process Control Program Changes (reference, Technical Specifications, 6.13)**

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

**Revisions to Previous Reports**

During the performance of Quality Audit 02-04 (OD) discrepancies were noted in previously submitted Radioactive Effluent Release Reports. The estimated total error for Fission and Activation Products (Noble gases) was reported as 100% for Unit 1 for periods of 2000 and 2001. The methodology listed in the body of the report stated that the estimated error should be 20%.

The Radioiodines on the Semiannual Summations for the periods of 1998 to 2001 listed the sum of the iodine-131 and iodine-133 radioactivities. Only the iodine-131 radioactivity should be reported on these semiannual summations. The revised sections of the semiannual summation are included in the Radioactive Data Tab following Gaseous Effluents for the periods of 1998 to 2001.



## GASEOUS EFFLUENTS

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

Unit: 1

Starting : 1-Jan-2002    Ending : 30-Jun-2002

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	1.019E+01	4.595E+01	100
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.310E+00	5.840E+00	
3. PERCENT OF LIMIT (9.60E+04 uCi/sec)	%	1.360E-03	6.090E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.00E+00	0.00E+00	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.00E+00	0.00E+00	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.00E+00	0.00E+00	
<b>C. PARTICULATES</b>				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	8.140E-07	6.240E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.050E-07	7.940E-07	
3. PERCENT OF LIMIT (3.00E-01 uCi/sec)	%	3.490E-05	2.650E-04	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.000E+00	0.000E+00	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	5.899E+00	1.399E+01	50
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	7.590E-01	1.780E+00	
3. PERCENT OF LIMIT (1.80E+05 uCi/sec)	%	4.210E-04	9.880E-04	

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 1

REPORT CATEGORY: SEMIANNUAL AIRBORNE GROUND LEVEL  
CONTINUOUS AND BATCH RELEASES. TOTALS  
FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: FISSION GASES, IODINES, AND PARTICULATES

REPORTING PERIOD: QUARTER # 1 AND QUARTER # 2 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
Argon-41	CURIES	6.38E-02	2.59E-01	0.00E+00	0.00E+00
Krypton-85	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-133	CURIES	1.01E+01	4.57E+01	0.00E+00	0.00E+00
Xenon-133M	CURIES	1.81E-03	7.62E-03	0.00E+00	0.00E+00
Xenon-135	CURIES	1.41E-03	3.29E-03	0.00E+00	0.00E+00
Xenon-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-138	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.02E+01	4.60E+01	0.00E+00	0.00E+00
IODINES					
Iodine-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine-133	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PARTICULATES					
Beryllium-7	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cerium-143	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt-58	CURIES	8.14E-07	1.45E-06	0.00E+00	0.00E+00
Cobalt-60	CURIES	0.00E+00	2.14E-06	0.00E+00	0.00E+00
Chrome-51	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cesium-134	CURIES	0.00E+00	9.26E-07	0.00E+00	0.00E+00
Cesium-137	CURIES	0.00E+00	1.28E-06	0.00E+00	0.00E+00
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Niobium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-101	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-99M	CURIES	0.00E+00	4.41E-07	0.00E+00	0.00E+00

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
Zirconium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	8.14E-07	6.24E-06	0.00E+00	0.00E+00
OTHER					
Hydrogen-3 (Tritium)	CURIES	5.90E+00	1.40E+01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.90E+00	1.40E+01	0.00E+00	0.00E+00

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

Unit: 1

Starting : 1-Jul-2002    Ending : 31-Dec-2002

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	6.655E+01	5.004E+01	100
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	8.370E+00	6.290E+00	
3. PERCENT OF LIMIT (9.60E+04 uCi/sec)	%	8.720E-03	6.560E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.00E+00	0.00E+00	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.00E+00	0.00E+00	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.00E+00	0.00E+00	
<b>C. PARTICULATES</b>				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	4.517E-07	8.912E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.680E-08	1.120E-06	
3. PERCENT OF LIMIT (3.00E-01 uCi/sec)	%	1.890E-05	3.740E-04	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.000E+00	0.000E+00	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	1.285E+01	1.145E+01	50
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.620E+00	1.440E+00	
3. PERCENT OF LIMIT (1.80E+05 uCi/sec)	%	8.980E-04	8.000E-04	

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 1

REPORT CATEGORY: SEMIANNUAL AIRBORNE GROUND LEVEL  
CONTINUOUS AND BATCH RELEASES. TOTALS  
FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: FISSION GASES, IODINES, AND PARTICULATES

REPORTING PERIOD: QUARTER # 3 AND QUARTER # 4 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
Argon-41	CURIES	5.36E-01	4.65E-01	5.70E-03	0.00E+00
Krypton-85	CURIES	2.81E-01	0.00E+00	3.81E-02	0.00E+00
Krypton-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-133	CURIES	6.57E+01	4.96E+01	2.61E-02	0.00E+00
Xenon-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-135	CURIES	1.96E-03	1.98E-02	0.00E+00	0.00E+00
Xenon-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-138	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	6.65E+01	5.00E+01	6.98E-02	0.00E+00
IODINES					
Iodine-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine-133	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PARTICULATES					
Beryllium-7	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cerium-143	CURIES	4.52E-07	0.00E+00	0.00E+00	0.00E+00
Cobalt-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt-58	CURIES	0.00E+00	3.84E-06	0.00E+00	0.00E+00
Cobalt-60	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrome-51	CURIES	0.00E+00	5.07E-06	0.00E+00	0.00E+00
Cesium-134	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cesium-137	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Niobium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-101	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
Zirconium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.52E-07	8.91E-06	0.00E+00	0.00E+00
OTHER					
Hydrogen-3 (Tritium)	CURIES	1.28E+01	1.15E+01	3.18E-02	0.00E+00
TOTAL FOR PERIOD	CURIES	1.28E+01	1.15E+01	3.18E-02	0.00E+00

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

Unit: 2

Starting : 1-Jan-2002    Ending : 30-Jun-2002

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	1.331E+01	6.068E+01	100
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.710E+00	7.720E+00	
3. PERCENT OF LIMIT (9.60E+04 uCi/sec)	%	1.780E-03	8.040E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	3.789E-07	2.026E-07	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	4.870E-08	2.580E-08	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.220E-04	6.440E-05	
<b>C. PARTICULATES</b>				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	4.094E-06	4.793E-08	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.270E-07	6.100E-09	
3. PERCENT OF LIMIT (3.00E-01 uCi/sec)	%	1.760E-04	2.030E-06	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.000E+00	0.000E+00	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	9.261E+00	3.408E+00	50
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.190E+00	4.330E-01	
3. PERCENT OF LIMIT (1.80E+05 uCi/sec)	%	6.620E-04	2.410E-04	



## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 2

REPORT CATEGORY: SEMIANNUAL AIRBORNE GROUND LEVEL  
CONTINUOUS AND BATCH RELEASES. TOTALS  
FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: FISSION GASES, IODINES, AND PARTICULATES

REPORTING PERIOD: QUARTER # 1 AND QUARTER # 2 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
Argon-41	CURIES	5.14E-01	2.00E+00	0.00E+00	5.85E-02
Krypton-85	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-85M	CURIES	0.00E+00	3.55E-06	0.00E+00	0.00E+00
Krypton-88	CURIES	0.00E+00	8.43E-06	0.00E+00	0.00E+00
Xenon-133	CURIES	1.28E+01	5.86E+01	0.00E+00	0.00E+00
Xenon-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-135	CURIES	0.00E+00	1.93E-05	0.00E+00	0.00E+00
Xenon-135M	CURIES	0.00E+00	1.01E-05	0.00E+00	0.00E+00
Xenon-138	CURIES	0.00E+00	2.58E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.33E+01	6.06E+01	0.00E+00	5.85E-02
IODINES					
Iodine-131	CURIES	3.79E-07	2.03E-07	0.00E+00	0.00E+00
Iodine-133	CURIES	4.06E-09	1.68E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.83E-07	3.70E-07	0.00E+00	0.00E+00
PARTICULATES					
Beryllium-7	CURIES	0.00E+00	3.58E-09	0.00E+00	0.00E+00
Cerium-143	CURIES	0.00E+00	2.59E-10	0.00E+00	0.00E+00
Cobalt-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt-58	CURIES	0.00E+00	1.55E-09	0.00E+00	0.00E+00
Cobalt-60	CURIES	4.09E-06	7.48E-11	0.00E+00	0.00E+00
Chrome-51	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cesium-134	CURIES	3.17E-10	1.68E-08	0.00E+00	0.00E+00
Cesium-137	CURIES	6.81E-10	1.80E-08	0.00E+00	0.00E+00
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	3.86E-10	0.00E+00	0.00E+00
Niobium-95	CURIES	0.00E+00	8.12E-11	0.00E+00	0.00E+00
Technitium-101	CURIES	0.00E+00	7.12E-09	0.00E+00	0.00E+00
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
Zirconium-95	CURIES	0.00E+00	6.54E-11	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.09E-06	4.79E-08	0.00E+00	0.00E+00
OTHER					
Hydrogen-3 (Tritium)	CURIES	9.26E+00	3.40E+00	0.00E+00	4.19E-03
TOTAL FOR PERIOD	CURIES	9.26E+00	3.40E+00	0.00E+00	4.19E-03

**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS**

**Unit: 2**

Starting : 1-Jul-2002    Ending : 31-Dec-2002

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	7.463E+01	8.092E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	9.390E+00	1.020E+01	
3. PERCENT OF LIMIT (9.60E+04 uCi/sec)	%	9.780E-03	1.060E-02	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.000E+00	9.484E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.000E+00	1.190E-06	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.000E+00	2.980E-03	
<b>C. PARTICULATES</b>				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	1.230E-06	4.276E-03	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.550E-07	5.380E-04	
3. PERCENT OF LIMIT (3.00E-01 uCi/sec)	%	5.160E-05	1.790E-01	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.000E+00	0.000E+00	
<b>D. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	4.585E+00	7.333E+00	50
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.770E-01	9.230E-01	
3. PERCENT OF LIMIT (1.80E+05 uCi/sec)	%	3.200E-04	5.130E-04	

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 2

REPORT CATEGORY: SEMIANNUAL AIRBORNE GROUND LEVEL  
CONTINUOUS AND BATCH RELEASES. TOTALS  
FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: FISSION GASES, IODINES, AND PARTICULATES

REPORTING PERIOD: QUARTER # 3 AND QUARTER # 4 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
Argon-41	CURIES	2.96E+00	0.00E+00	6.49E-01	2.47E+00
Krypton-85	CURIES	4.33E-04	0.00E+00	0.00E+00	0.00E+00
Krypton-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-133	CURIES	7.10E+01	7.84E+01	1.24E-02	4.70E-02
Xenon-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-135	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-138	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.40E+01	7.84E+01	6.61E-01	2.51E+00
IODINES					
Iodine-131	CURIES	0.00E+00	4.29E-07	0.00E+00	9.06E-06
Iodine-133	CURIES	5.60E-09	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.60E-09	4.29E-07	0.00E+00	9.06E-06
PARTICULATES					
Beryllium-7	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cerium-143	CURIES	1.20E-06	0.00E+00	3.00E-08	0.00E+00
Cobalt-57	CURIES	0.00E+00	1.12E-08	0.00E+00	6.44E-06
Cobalt-58	CURIES	9.51E-10	8.83E-05	0.00E+00	3.63E-03
Cobalt-60	CURIES	0.00E+00	2.26E-06	0.00E+00	1.06E-04
Chrome-51	CURIES	0.00E+00	2.11E-06	0.00E+00	2.46E-04
Cesium-134	CURIES	8.95E-10	0.00E+00	0.00E+00	5.98E-06
Cesium-137	CURIES	1.16E-09	0.00E+00	0.00E+00	1.79E-05
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	4.25E-06
Manganese-54	CURIES	0.00E+00	1.21E-07	0.00E+00	1.60E-05
Niobium-95	CURIES	0.00E+00	9.26E-07	0.00E+00	8.91E-05
Technitium-101	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
Zirconium-95	CURIES	0.00E+00	4.90E-08	0.00E+00	5.52E-05
TOTAL FOR PERIOD	CURIES	1.20E-06	9.37E-05	3.00E-08	4.18E-03
OTHER					
Hydrogen-3 (Tritium)	CURIES	4.58E+00	5.59E-01	8.74E-03	6.77E+00
TOTAL FOR PERIOD	CURIES	4.58E+00	5.59E-01	8.74E-03	6.77E+00

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

Unit 1 plus 2 Total

REPORT CATEGORY: ANNUAL AIRBORNE GROUND LEVEL RELEASES.  
TOTALS FOR EACH NUCLIDE RELEASED. FOR  
ALL OF 2002

NUCLIDES RELEASED	UNIT	UNIT 1 2002	UNIT 2 2002	TOTAL 2002
FISSION GASES				
Argon-41	CURIES	1.330E+00	8.647E+00	9.977E+00
Krypton-85	CURIES	3.189E-01	4.332E-04	3.194E-01
Krypton-85M	CURIES	0.000E+00	3.546E-06	3.546E-06
Krypton-88	CURIES	0.000E+00	8.426E-06	8.426E-06
Xenon-133	CURIES	1.706E+02	2.201E+02	3.908E+02
Xenon-133M	CURIES	9.427E-03	0.000E+00	9.427E-03
Xenon-135	CURIES	2.646E-02	1.931E-05	2.648E-02
Xenon-135M	CURIES	0.000E+00	1.011E-05	1.011E-05
Xenon-138	CURIES	0.000E+00	2.580E-05	2.580E-05
TOTAL FOR PERIOD	CURIES	1.723E+02	2.288E+02	4.011E+02
IODINES				
Iodine-131	CURIES	0.000E+00	1.007E-05	1.007E-05
Iodine-133	CURIES	0.000E+00	1.772E-07	1.772E-07
TOTAL FOR PERIOD	CURIES	0.000E+00	1.024E-05	1.024E-05
PARTICULATES				
Beryllium-7	CURIES	0.000E+00	3.578E-09	3.578E-09
Cerium-143	CURIES	4.517E-07	1.228E-06	1.679E-06
Cobalt-57	CURIES	0.000E+00	6.455E-06	6.455E-06
Cobalt-58	CURIES	6.108E-06	3.722E-03	3.728E-03
Cobalt-60	CURIES	2.143E-06	1.128E-04	1.150E-04
Chrome-51	CURIES	5.071E-06	2.485E-04	2.536E-04
Cesium-134	CURIES	9.264E-07	6.003E-06	6.929E-06
Cesium-137	CURIES	1.276E-06	1.791E-05	1.919E-05
Iron-59	CURIES	0.000E+00	4.252E-06	4.252E-06
Manganese-54	CURIES	0.000E+00	1.615E-05	1.615E-05
Niobium-95	CURIES	0.000E+00	9.000E-05	9.000E-05
Technitium-101	CURIES	0.000E+00	7.121E-09	7.121E-09
Technitium-99M	CURIES	4.412E-07	0.000E+00	4.412E-07
Zirconium-95	CURIES	0.000E+00	5.520E-05	5.520E-05
TOTAL FOR PERIOD	CURIES	1.642E-05	4.281E-03	4.297E-03
OTHER				

<b>NUCLIDES RELEASED</b>	<b>UNIT</b>	<b>UNIT 1 2002</b>	<b>UNIT 2 2002</b>	<b>TOTAL 2002</b>
Hydrogen-3 (Tritium)	CURIES	4.415E+01	2.455E+01	6.870E+01
<b>TOTAL FOR PERIOD</b>	<b>CURIES</b>	<b>4.415E+01</b>	<b>2.455E+01</b>	<b>6.870E+01</b>

**REVISED GASEOUS EFFLUENTS SUMMATIONS FROM 1998  
TO 2001**



**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS**

**Unit: 1**

Starting : 1-Jan-1998    Ending : 30-Jun-1998

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	5.970E-06	1.890E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	7.677E-07	2.404E-04	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.919E-03	6.010E-03	

**Unit: 1**

Starting : 1-Jul-1998    Ending : 31-Dec-1998

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	4.820E-06	6.380E-07	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	6.064E-07	8.026E-08	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.516E-03	2.007E-04	

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

**Unit: 2**

Starting : 1-Jan-1998    Ending : 30-Jun-1998

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.000E+00	0.000E+00	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.000E+00	0.000E+00	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.000E+00	0.000E+00	

**Unit: 2**

Starting : 1-Jul-1998    Ending : 31-Dec-1998

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.000E+00	7.192E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.000E+00	9.048E-06	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.000E+00	2.262E-02	

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

**Unit: 1**

Starting : 1-Jan-1999    Ending : 30-Jun-1999

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	4.630E-03	7.080E-03	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.954E-04	8.907E-04	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.489E+00	2.227E+00	

**Unit: 1**

Starting : 1-Jul-1999    Ending : 31-Dec-1999

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	1.630E-05	1.126E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.051E-06	1.417E-07	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	5.127E-03	3.543E-04	

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

Unit: 2

Starting : 1-Jan-1999 Ending : 30-Jun-1999

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	1.091E-06	2.500E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.403E-07	3.180E-07	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	3.508E-04	7.949E-04	

Unit: 2

Starting : 1-Jul-1999 Ending : 31-Dec-1999

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	4.630E-05	6.790E-03	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.825E-06	8.542E-04	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.456E-02	2.136E+00	

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

**Unit: 1**

Starting : 1-Jan-2000    Ending : 30-Jun-2000

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	1.878E+02	1.119E+02	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.388E+01	1.424E+01	
3. PERCENT OF LIMIT (2.70E+05 uCi/sec)	%	8.684E-03	5.177E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	1.166E-03	8.879E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.483E-04	1.129E-05	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	3.708E-01	2.823E-02	

**Unit: 1**

Starting : 1-Jul-2000    Ending : 31-Dec-2000

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	3.908E+00	8.954E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	4.916E-01	1.126E+01	
3. PERCENT OF LIMIT (2.70E+05 uCi/sec)	%	1.788E-04	4.096E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	9.240E-06	5.040E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.162E-06	6.341E-06	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	2.906E-03	1.585E-02	

**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS**

**Unit: 2**

Starting : 1-Jan-2000    Ending : 30-Jun-2000

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	6.836E-07	9.145E-07	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	8.313E-08	1.163E-07	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	2.078E-04	2.908E-04	

**Unit: 2**

Starting : 1-Jul-2000    Ending : 31-Dec-2000

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	2.020E-09	1.020E-08	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.541E-10	1.283E-09	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	6.353E-07	3.208E-06	

**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS**

**Unit: 1**

Starting : 1-Jan-2001    Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	1.036E+02	1.572E+02	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.330E+01	2.000E+01	
3. PERCENT OF LIMIT (2.70E+05 uCi/sec)	%	4.940E-03	7.410E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	3.983E-05	2.840E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	5.123E-06	3.612E-06	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.281E-02	9.030E-03	

**Unit: 1**

Starting : 1-Jul-2001    Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE	CURIES	1.565E+02	1.162E+02	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.970E+01	1.460E+01	
3. PERCENT OF LIMIT (2.70E+05 uCi/sec)	%	7.290E-03	5.410E-03	
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	3.280E-05	7.064E-03	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	4.126E-06	8.887E-04	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.032E-02	2.222E+00	

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL AIRBORNE EFFLUENTS

Unit: 2

Starting : 1-Jan-2001    Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	3.813E-03	1.619E-05	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	4.904E-04	2.060E-06	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	1.226E+00	5.150E-03	

Unit: 2

Starting : 1-Jul-2001    Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>B. RADIOIODINES</b>				
1. IODINE-131	CURIES	0.000E+00	6.101E-06	25
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	0.000E+00	7.680E-07	
3. PERCENT OF LIMIT (4.00E-02 uCi/sec)	%	0.000E+00	1.920E-03	



## LIQUID EFFLUENTS

**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL LIQUID EFFLUENTS**

**Unit: 1**

Starting : 1-Jan-2002    Ending : 30-Jun-2002

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	4.948E-03	1.653E-02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	4.949E-09	7.950E-09	
3. PERCENT OF EC* LIMIT (FRACTIONAL)	%	2.221E-03	7.473E-03	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	1.100E+02	2.157E+02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.100E-04	1.037E-04	
3. % OF LIMIT (1.00E-02 uCi/mL)	%	1.100E+00	1.037E+00	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	CURIES	1.662E-02	3.295E-02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.662E-08	1.585E-08	
3. PERCENT OF LIMIT (2.00E-04 uCi/mL)	%	8.310E-03	7.923E-03	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CURIES	0.000E+00	0.000E+00	10
<b>E. WASTE VOL RELEASED</b>				
1. TOTAL PRE-DILUTION VOLUME	LITERS	2.601E+06	3.283E+06	1
2. BATCH PRE-DILUTION VOLUME	LITERS	6.387E+05	1.021E+06	1
F. VOLUME OF DILUTION WATER USED**	LITERS	9.971E+08	2.076E+09	10

\*EC= Effluent Concentration

\*\*\*"Volume of dilution water used" means the volume of water circulated through the main condenser during the actual time of release. Liquid effluent releases ultimately dilute into the volume of the onsite main cooling reservoir and then into offsite water bodies as described in Section 2, subsection Radiological Impact on Man of this report.

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 1

REPORT CATEGORY: SEMIANNUAL LIQUID CONTINUOUS AND BATCH  
RELEASES. TOTALS FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: ALL RADIONUCLIDES

REPORTING PERIOD: QUARTER # 1 AND QUARTER # 2 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
ALL NUCLIDES					
Silver-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.98E-05
Cobalt-57	CURIES	0.00E+00	0.00E+00	1.16E-06	3.17E-06
Cobalt-58	CURIES	0.00E+00	0.00E+00	6.00E-04	9.12E-04
Cobalt-60	CURIES	0.00E+00	0.00E+00	3.11E-04	1.84E-03
Chrome-51	CURIES	0.00E+00	0.00E+00	1.62E-05	0.00E+00
Cesium-134	CURIES	0.00E+00	0.00E+00	8.05E-06	1.55E-04
Cesium-137	CURIES	0.00E+00	0.00E+00	1.96E-05	2.11E-04
Iron-55	CURIES	0.00E+00	0.00E+00	3.18E-03	2.96E-03
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	4.21E-06
Tritium	CURIES	1.57E-01	1.87E-01	1.10E+02	2.16E+02
Iodine-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine-133	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-85	CURIES	0.00E+00	0.00E+00	1.11E-02	0.00E+00
Krypton-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	0.00E+00	4.32E-04	5.69E-04
Niobium-95	CURIES	0.00E+00	0.00E+00	1.47E-05	1.00E-04
Antimony-122	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony-124	CURIES	0.00E+00	0.00E+00	2.13E-06	0.00E+00
Antimony-125	CURIES	0.00E+00	0.00E+00	3.29E-04	1.97E-03
Antimony-126	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tin-117M	CURIES	0.00E+00	0.00E+00	1.45E-05	1.67E-04
Strontium-89	CURIES	0.00E+00	0.00E+00	7.81E-06	1.10E-05
Strontium-90	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Telurium-125M	CURIES	0.00E+00	0.00E+00	0.00E+00	7.57E-03
Telurium-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-131M	CURIES	0.00E+00	0.00E+00	0.00E+00	5.59E-04
Xenon-133	CURIES	0.00E+00	0.00E+00	5.41E-03	3.21E-02
Xenon-133M	CURIES	0.00E+00	0.00E+00	6.28E-05	3.06E-04
Xenon-135	CURIES	0.00E+00	0.00E+00	4.49E-06	0.00E+00
Yttrium-91	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zirconium-95	CURIES	0.00E+00	0.00E+00	8.43E-06	1.64E-05
TOTAL FOR PERIOD	CURIES	1.57E-01	1.87E-01	1.10E+02	2.16E+02

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL LIQUID EFFLUENTS

Unit: 1

Starting : 1-Jul-2002 Ending : 31-Dec-2002

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM; GASES, ALPHA)	CURIES	3.895E-02	1.877E-02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.220E-08	4.946E-09	
3. PERCENT OF EC* LIMIT (FRACTIONAL)	%	7.439E-03	4.796E-03	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	5.386E+02	3.761E+02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.687E-04	9.910E-05	
3. % OF LIMIT (1.00E-02 uCi/mL)	%	1.688E+00	9.911E-01	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	CURIES	1.958E-02	7.724E-01	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	6.135E-09	2.035E-07	
3. PERCENT OF LIMIT (2.00E-04 uCi/mL)	%	3.067E-03	1.018E-01	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CURIES	0.000E+00	0.000E+00	10
<b>E. WASTE VOL RELEASED</b>				
1. TOTAL PRE-DILUTION VOLUME	LITERS	3.740E+06	4.261E+06	1
2. BATCH PRE-DILUTION VOLUME	LITERS	1.533E+06	2.154E+06	1
F. VOLUME OF DILUTION WATER USED**	LITERS	3.188E+09	3.791E+09	10

\*EC= Effluent Concentration

\*\*\*"Volume of dilution water used" means the volume of water circulated through the main condenser during the actual time of release. Liquid effluent releases ultimately dilute into the volume of the onsite main cooling reservoir and then into offsite water bodies as described in Section 2, subsection Radiological Impact on Man of this report.

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 1

REPORT CATEGORY: SEMIANNUAL LIQUID CONTINUOUS AND BATCH  
RELEASES. TOTALS FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: ALL RADIONUCLIDES

REPORTING PERIOD: QUARTER # 3 AND QUARTER # 4 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
ALL NUCLIDES					
Silver-110M	CURIES	0.00E+00	0.00E+00	3.43E-05	1.25E-05
Cobalt-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt-58	CURIES	0.00E+00	0.00E+00	4.81E-04	1.58E-03
Cobalt-60	CURIES	0.00E+00	0.00E+00	2.18E-03	2.01E-03
Chrome-51	CURIES	0.00E+00	0.00E+00	2.71E-05	3.08E-04
Cesium-134	CURIES	0.00E+00	0.00E+00	1.82E-05	2.30E-04
Cesium-137	CURIES	0.00E+00	0.00E+00	4.60E-05	3.24E-04
Iron-55	CURIES	0.00E+00	0.00E+00	3.10E-03	4.55E-03
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium	CURIES	1.18E-01	3.11E-02	5.57E+02	3.76E+02
Iodine-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine-133	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Krypton-85	CURIES	0.00E+00	0.00E+00	1.71E-03	7.81E-03
Krypton-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.38E-05
Lanthanum-142	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	0.00E+00	1.62E-04	2.34E-04
Niobium-95	CURIES	0.00E+00	0.00E+00	2.10E-05	2.95E-05
Antimony-122	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony-124	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony-125	CURIES	0.00E+00	0.00E+00	7.41E-03	3.90E-03
Antimony-126	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tin-117M	CURIES	0.00E+00	0.00E+00	2.77E-04	5.74E-05
Strontium-89	CURIES	0.00E+00	0.00E+00	1.72E-05	3.86E-06
Strontium-90	CURIES	0.00E+00	0.00E+00	0.00E+00	1.29E-05
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Telurium-125M	CURIES	0.00E+00	0.00E+00	2.54E-02	5.50E-03
Telurium-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xenon-131M	CURIES	0.00E+00	0.00E+00	7.01E-04	1.95E-02
Xenon-133	CURIES	0.00E+00	0.00E+00	1.91E-02	7.40E-01
Xenon-133M	CURIES	0.00E+00	0.00E+00	1.14E-04	3.52E-03
Xenon-135	CURIES	0.00E+00	0.00E+00	0.00E+00	2.05E-03
Zirconium-95	CURIES	0.00E+00	0.00E+00	6.12E-06	1.65E-05
TOTAL FOR PERIOD	CURIES	1.18E-01	3.11E-02	5.57E+02	3.77E+02

SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL LIQUID EFFLUENTS

Unit: 2

Starting : 1-Jan-2002    Ending : 30-Jun-2002

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	4.724E-03	1.419E-02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	5.881E-09	3.681E-09	
3. PERCENT OF EC* LIMIT (FRACTIONAL)	%	2.602E-03	2.250E-03	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	2.417E+02	4.643E+02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	3.009E-04	1.204E-04	
3. % OF LIMIT (1.00E-02 uCi/mL)	%	3.009E+00	1.205E+00	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	CURIES	1.019E-04	9.027E-03	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.268E-10	2.342E-09	
3. PERCENT OF LIMIT (2.00E-04 uCi/mL)	%	6.342E-05	1.171E-03	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CURIES	0.000E+00	0.000E+00	10
<b>E. WASTE VOL RELEASED</b>				
1. TOTAL PRE-DILUTION VOLUME	LITERS	2.516E+06	4.067E+06	1
2. BATCH PRE-DILUTION VOLUME	LITERS	5.546E+05	2.084E+06	1
<b>F. VOLUME OF DILUTION WATER USED**</b>				
	LITERS	8.008E+08	3.851E+09	10

\*EC= Effluent Concentration

\*\*"Volume of dilution water used" means the volume of water circulated through the main condenser during the actual time of release. Liquid effluent releases ultimately dilute into the volume of the onsite main cooling reservoir and then into offsite water bodies as described in Section 2, subsection Radiological Impact on Man of this report.

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 2

REPORT CATEGORY: SEMIANNUAL LIQUID CONTINUOUS AND BATCH  
RELEASES. TOTALS FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: ALL RADIONUCLIDES

REPORTING PERIOD: QUARTER # 1 AND QUARTER # 2 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
ALL NUCLIDES					
Silver-110M	CURIES	0.00E+00	0.00E+00	3.84E-06	0.00E+00
Cobalt-57	CURIES	0.00E+00	0.00E+00	0.00E+00	9.73E-07
Cobalt-58	CURIES	0.00E+00	0.00E+00	1.42E-04	8.20E-05
Cobalt-60	CURIES	0.00E+00	0.00E+00	2.99E-04	1.14E-03
Chrome-51	CURIES	0.00E+00	0.00E+00	3.89E-05	0.00E+00
Cesium-134	CURIES	0.00E+00	0.00E+00	0.00E+00	1.40E-05
Cesium-137	CURIES	0.00E+00	0.00E+00	2.81E-06	2.41E-05
Iron-55	CURIES	0.00E+00	0.00E+00	1.98E-03	4.67E-03
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	4.39E-06
Tritium	CURIES	4.95E-01	6.19E-01	2.42E+02	4.64E+02
Iodine-131	CURIES	0.00E+00	0.00E+00	3.16E-06	1.20E-05
Iodine-133	CURIES	0.00E+00	0.00E+00	0.00E+00	1.02E-06
Krypton-85	CURIES	0.00E+00	0.00E+00	0.00E+00	1.23E-03
Lanthanum-142	CURIES	0.00E+00	0.00E+00	0.00E+00	2.09E-06
Manganese-54	CURIES	0.00E+00	0.00E+00	9.49E-05	6.87E-05
Niobium-95	CURIES	0.00E+00	0.00E+00	4.54E-06	0.00E+00
Antimony-125	CURIES	0.00E+00	0.00E+00	2.13E-03	1.81E-03
Tin-117M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.56E-05
Strontium-89	CURIES	0.00E+00	0.00E+00	1.10E-05	4.34E-05
Technitium-99M	CURIES	0.00E+00	0.00E+00	8.60E-06	7.33E-06
Telurium-125M	CURIES	0.00E+00	0.00E+00	0.00E+00	6.29E-03
Xenon-133	CURIES	0.00E+00	0.00E+00	1.02E-04	7.60E-03
Xenon-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	7.67E-05
Xenon-135	CURIES	0.00E+00	0.00E+00	0.00E+00	1.18E-04
TOTAL FOR PERIOD	CURIES	4.95E-01	6.19E-01	2.42E+02	4.64E+02

**SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY  
SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER  
ALL LIQUID EFFLUENTS**

**Unit: 2**

Starting : 1-Jul-2002    Ending : 31-Dec-2002

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
<b>A. FISSION &amp; ACTIVATION PRODUCTS</b>				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	2.745E-02	4.179E-02	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	9.550E-09	1.291E-08	
3. PERCENT OF EC* LIMIT (FRACTIONAL)	%	6.697E-03	9.456E-03	
<b>B. TRITIUM</b>				
1. TOTAL RELEASE	CURIES	5.351E+02	8.717E+01	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.862E-04	2.693E-05	
3. % OF LIMIT (1.00E-02 uCi/mL)	%	1.862E+00	2.693E-01	
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
1. TOTAL RELEASE	CURIES	1.205E-02	8.052E-03	10
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	4.192E-09	2.488E-09	
3. PERCENT OF LIMIT (2.00E-04 uCi/mL)	%	2.096E-03	1.244E-03	
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CURIES	0.000E+00	0.000E+00	10
<b>E. WASTE VOL RELEASED</b>				
1. TOTAL PRE-DILUTION VOLUME	LITERS	3.440E+06	3.974E+06	1
2. BATCH PRE-DILUTION VOLUME	LITERS	1.435E+06	1.969E+06	1
<b>F. VOLUME OF DILUTION WATER USED**</b>				
	LITERS	2.871E+09	3.233E+09	10

\*EC= Effluent Concentration

\*\*"Volume of dilution water used" means the volume of water circulated through the main condenser during the actual time of release. Liquid effluent releases ultimately dilute into the volume of the onsite main cooling reservoir and then into offsite water bodies as described in Section 2, subsection Radiological Impact on Man of this report.



## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 2

REPORT CATEGORY: SEMIANNUAL LIQUID CONTINUOUS AND BATCH  
RELEASES. TOTALS FOR EACH NUCLIDE RELEASED.

TYPE OF ACTIVITY: ALL RADIONUCLIDES

REPORTING PERIOD: QUARTER # 3 AND QUARTER # 4 YEAR 2002

NUCLIDES RELEASED	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
ALL NUCLIDES					
Silver-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	2.94E-06
Cobalt-57	CURIES	0.00E+00	0.00E+00	7.89E-06	5.48E-05
Cobalt-58	CURIES	0.00E+00	0.00E+00	6.29E-04	9.71E-03
Cobalt-60	CURIES	0.00E+00	0.00E+00	2.14E-03	3.28E-03
Chrome-51	CURIES	0.00E+00	0.00E+00	0.00E+00	4.61E-04
Cesium-134	CURIES	0.00E+00	0.00E+00	2.11E-04	1.02E-04
Cesium-137	CURIES	0.00E+00	0.00E+00	3.21E-04	2.23E-04
Iron-55	CURIES	0.00E+00	0.00E+00	1.36E-02	8.57E-03
Iron-59	CURIES	0.00E+00	0.00E+00	0.00E+00	4.56E-06
Tritium	CURIES	4.62E-01	1.63E-01	5.35E+02	8.70E+01
Iodine-131	CURIES	0.00E+00	0.00E+00	0.00E+00	8.96E-06
Krypton-85	CURIES	0.00E+00	0.00E+00	0.00E+00	7.88E-04
Krypton-85M	CURIES	0.00E+00	0.00E+00	3.17E-06	0.00E+00
Lanthanum-142	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese-54	CURIES	0.00E+00	0.00E+00	1.54E-04	2.11E-03
Niobium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	5.11E-05
Antimony-122	CURIES	0.00E+00	0.00E+00	0.00E+00	1.03E-03
Antimony-124	CURIES	0.00E+00	0.00E+00	0.00E+00	2.71E-03
Antimony-125	CURIES	0.00E+00	0.00E+00	2.87E-03	1.31E-02
Antimony-126	CURIES	0.00E+00	0.00E+00	0.00E+00	4.56E-05
Tin-117M	CURIES	0.00E+00	0.00E+00	5.73E-06	0.00E+00
Strontium-89	CURIES	0.00E+00	0.00E+00	3.67E-05	2.86E-05
Strontium-90	CURIES	0.00E+00	0.00E+00	5.31E-06	3.71E-06
Technitium-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	8.81E-06
Telurium-125M	CURIES	0.00E+00	0.00E+00	7.47E-03	0.00E+00
Telurium-132	CURIES	0.00E+00	0.00E+00	1.86E-06	2.31E-06
Xenon-133	CURIES	0.00E+00	0.00E+00	1.16E-02	6.82E-03
Xenon-133M	CURIES	0.00E+00	0.00E+00	1.72E-04	8.32E-05
Xenon-135	CURIES	0.00E+00	0.00E+00	2.66E-04	3.64E-04
Yttrium-91	CURIES	0.00E+00	0.00E+00	0.00E+00	2.62E-04
Zirconium-95	CURIES	0.00E+00	0.00E+00	0.00E+00	8.03E-06
TOTAL FOR PERIOD	CURIES	4.62E-01	1.63E-01	5.35E+02	8.71E+01

## SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY

## Unit 1 plus 2 Total

REPORT CATEGORY: ANNUAL LIQUID RELEASES. TOTALS FOR EACH  
NUCLIDE RELEASED. FOR ALL OF 2002

NUCLIDES RELEASED	UNIT	UNIT 1 2002	UNIT 2 2002	TOTAL 2002
ALL NUCLIDES				
Silver-110M	CURIES	8.660E-05	6.780E-06	9.330E-05
Cobalt-57	CURIES	4.320E-06	6.360E-05	6.800E-05
Cobalt-58	CURIES	3.580E-03	1.060E-02	1.410E-02
Cobalt-60	CURIES	6.340E-03	6.850E-03	1.320E-02
Chrome-51	CURIES	3.510E-04	5.000E-04	8.510E-04
Cesium-134	CURIES	4.120E-04	3.260E-04	7.380E-04
Cesium-137	CURIES	6.010E-04	5.720E-04	1.170E-03
Iron-55	CURIES	1.380E-02	2.880E-02	4.260E-02
Iron-59	CURIES	4.210E-06	8.950E-06	1.320E-05
Tritium	CURIES	1.260E+03	1.330E+03	2.590E+03
Iodine-131	CURIES	0.000E+00	2.410E-05	2.410E-05
Iodine-133	CURIES	0.000E+00	1.020E-06	1.020E-06
Krypton-85	CURIES	2.070E-02	2.020E-03	2.270E-02
Krypton-85M	CURIES	1.380E-05	3.170E-06	1.690E-05
Lanthanum-142	CURIES	0.000E+00	2.090E-06	2.090E-06
Manganese-54	CURIES	1.400E-03	2.430E-03	3.830E-03
Niobium-95	CURIES	1.660E-04	5.570E-05	2.210E-04
Antimony-122	CURIES	0.000E+00	1.030E-03	1.030E-03
Antimony-124	CURIES	2.130E-06	2.710E-03	2.710E-03
Antimony-125	CURIES	1.360E-02	1.990E-02	3.350E-02
Antimony-126	CURIES	0.000E+00	4.560E-05	4.560E-05
Tin-117M	CURIES	5.160E-04	2.130E-05	5.380E-04
Strontium-89	CURIES	3.990E-05	1.200E-04	1.600E-04
Strontium-90	CURIES	1.290E-05	9.010E-06	2.190E-05
Technitium-99M	CURIES	0.000E+00	2.470E-05	2.470E-05
Telurium-125M	CURIES	3.840E-02	1.380E-02	5.220E-02
Telurium-132	CURIES	0.000E+00	4.170E-06	4.170E-06
Xenon-131M	CURIES	2.070E-02	0.000E+00	2.070E-02
Xenon-133	CURIES	7.960E-01	2.610E-02	8.220E-01
Xenon-133M	CURIES	4.010E-03	3.320E-04	4.340E-03
Xenon-135	CURIES	2.050E-03	7.480E-04	2.800E-03
Yttrium-91	CURIES	0.000E+00	2.620E-04	2.620E-04
Zirconium-95	CURIES	4.750E-05	8.030E-06	5.550E-05
TOTAL	CURIES	1.260E+03	1.330E+03	2.590E+03
TOTAL Noble Gases	CURIES	8.435E-01	2.920E-02	8.726E-01
TOTAL Excluding Tritium & Noble Gases	CURIES	7.936E-02	8.818E-02	1.675E-01

## Solid Waste and Irradiated Fuel Shipments

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not Irradiated Fuel)

1. Type of Waste	Units	12-Month		Est. Total Error, %	
		Period Shipped	Period Buried		
a. Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup>	4.41E+01	4.9E+00	-1.0E+00	+1.0E+00
	Ci	5.02E+02	4.37E+02	-5.0E+01	+1.0E+02
b. Dry compressible waste, contaminated equip., etc.	m <sup>3</sup>	5.89E+02	1.28E+01	-1.0E+00	+1.0E+00
	Ci	5.61E-01	6.01E-01	-6.6E+01	+2.0E+02
c. Irradiated components, control rods, etc.	m <sup>3</sup>	0.00E+00	0.00E+00	N/A	N/A
	Ci	0.00E+00	0.00E+00		
d. Other (low level secondary resin, sludge)	m <sup>3</sup>	9.42E+01	9.42E+01	-1.0E+00	+1.0E+00
	Ci	2.02E-04	2.02E-04	-5.0E+01	+1.0E+02

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

a. Spent resins, filters, evaporator bottoms, etc.		
Nickel-63	%	5.41E+01
Iron-55	%	1.70E+01
Cobalt-60	%	1.09E+01
Cesium-137	%	8.8E+00
Cesium-134	%	5.5E+00
Manganese-54	%	1.5E+00
Tritium	%	1.1E+00
Sb-125	%	6E-01
Ni-59	%	2E-01
Cobalt-58	%	2E-01
b. Dry compressible waste, contaminated equip., etc.		
Cobalt-58	%	4.16E+01
Cromium-51	%	1.86E+01
Iron-55	%	1.78E+01
Nickel-63	%	5.6E+00
Cobalt-60	%	3.8E+00
Niobium-95	%	3.7E+00
Zirconium-95	%	3.4E+00
Antimony-124	%	2.0E+00
Manganese-54	%	1.0E+00
Iron-59		7E-01
c. N/A	N/A	N/A
d. Other (secondary DE and HVAC charcoal)		
Tritium	%	6.63E+01
Iron-55	%	1.69E+01
Nickel-63	%	6.1E+00
Cobalt-60	%	4.0E+00
Cesium-137	%	2.8E+00
Cesium-134	%	1.7E+00
Cerium-144	%	1.4E+00
Manganese-54	%	5E-01

Solid Waste and Irradiated Fuel Shipments

3. Solid Waste Disposition:

Number of Shipments	Mode of Transportation	Destination
12	Truck	Studsvik Processing Facility, LLC 151 TC Runnion Rd. Erwin, Tn 37650
10	Truck	GTS-Duratek 1560 Bear Creek Road Oak Ridge, TN 37830
1	Truck	Chem-Nuclear Systems Barnwell Waste Management Facility 740 Osborn Rd. Barnwell, SC 29812
2	Truck	GTS-Duratek Gallaher Road Facility 628 Gallaher Rd. Kingston, TN 37763

4. Class of Solid Waste:

A, B & C

5. Type of Containers Used for Shipment:

Strong Tight, High-Integrity Containers, Type A and B casks

6. Solidifying Agent:

N/A

B. IRRADIATED FUEL SHIPMENTS (Disposal)

No shipments made during this period.

## DOSE ACCUMULATIONS

STP NUCLEAR OPERATING COMPANY  
SUMMARY OF MAXIMUM INDIVIDUAL DOSES

Unit: 1

TOTAL ACCUMULATION FOR PERIODS:  
for LIQUID, GASEOUS AND AIR  
Starting: 1-Jan-2002 Ending: 31-Dec-2002

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (m) (TOWARD)	% OF APPLICABLE LIMIT	LIMIT (mrad or mrem)
LIQUID	TOTAL BODY	7.25E-03	ADULT	RECEPTOR 3 <sup>(5)</sup>	2.42E-01	3.0
LIQUID	GI-TRACT	7.36E-03	ADULT	RECEPTOR 3 <sup>(5)</sup>	7.36E-02	10.0
NOBLE GAS	AIR DOSE (gamma-mrad)	2.32E-03		1540m NNW	2.32E-02	10.0
NOBLE GAS	AIR DOSE (beta-mrad)	5.66E-03		1540m NNW	2.83E-02	20.0
NOBLE GAS	TOTAL BODY	3.55E-03	ALL <sup>(1)</sup>	1540m NNW	2.78E-02	5.0
NOBLE GAS	TOTAL BODY	7.22E-04	ALL <sup>(2)</sup>	4000m WSW	5.30E-03	5.0
NOBLE GAS	SKIN	1.17E-02	ALL <sup>(1)</sup>	1540m NNW	2.37E-02	15.0
NOBLE GAS	SKIN	3.11E-03	ALL <sup>(2)</sup>	4000m WSW	4.82E-03	15.0
IODINE, PARTICULATES & TRITIUM	LIVER	4.90E-03	CHILD <sup>(1)</sup>	1540m NNW	3.27E-02	15.0
IODINE, PARTICULATES & TRITIUM	LIVER	1.03E-03	CHILD <sup>(2)</sup>	4000m WSW	6.86E-03	15.0

SUMMARY OF POPULATION DOSES FOR 2002			
EFFLUENT	APPLICABLE ORGAN	ESTIMATED POPULATION DOSE (person-rem)	AVERAGE DOSE TO POPULATION (rem per person)
LIQUID	TOTAL BODY	2.2E-03	1.1E-07 <sup>(3)</sup>
GASEOUS	TOTAL BODY	6.4E-03	7.3E-07 <sup>(4)</sup>

NOTES:

- <sup>(1)</sup>Doses were calculated for HYPOTHETICAL receptors at the site boundary.
- <sup>(2)</sup>Highest dose for nearest individual or receptor. This individual is assumed to reside at this location.
- <sup>(3)</sup> Calculation based on a population of 303,500 for shore line exposure and for salt water invertebrate ingestion and 18,500 for salt water sport fish ingestion.
- <sup>(4)</sup> Calculation based on a population of 299,000 within fifty (50) miles of South Texas Project Electric Generating Station.
- <sup>(5)</sup>Receptor 3 is an individual ingesting fresh water sport fish and receiving shoreline exposure from the Little Robbins Slough Area.

STP NUCLEAR OPERATING COMPANY  
SUMMARY OF MAXIMUM INDIVIDUAL DOSES

Unit: 2

TOTAL ACCUMULATION FOR PERIODS:

for LIQUID, GASEOUS, AND AIR

Starting: 1-Jan-2002 Ending: 31-Dec-2002

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (m) (TOWARD)	% OF APPLICABLE LIMIT	LIMIT (mrad or mrem)
LIQUID	TOTAL BODY	7.65E-03	ADULT	RECEPTOR 3 <sup>(5)</sup>	2.55E-01	3.0
LIQUID	GI-TRACT	7.75E-03	ADULT	RECEPTOR 3 <sup>(5)</sup>	7.75E-02	10.0
NOBLE GAS	AIR DOSE (gamma-mrad)	5.38E-03		1850m WNW	5.38E-02	10.0
NOBLE GAS	AIR DOSE (beta-mrad)	6.80E-03		1720m NW	3.40E-02	20.0
NOBLE GAS	TOTAL BODY	3.45E-03	ALL <sup>(1)</sup>	1850m WNW	6.91E-02	5.0
NOBLE GAS	TOTAL BODY	7.43E-04	ALL <sup>(2)</sup>	4000m WSW	1.49E-02	5.0
NOBLE GAS	SKIN	6.64E-03	ALL <sup>(1)</sup>	1850m WNW	4.43E-02	15.0
NOBLE GAS	SKIN	1.63E-03	ALL <sup>(2)</sup>	4000m WSW	1.08E-02	15.0
IODINE, PARTICULATES & TRITIUM	GI-TRACT	4.04E-03	CHILD <sup>(1)</sup>	1720m NW	2.69E-02	15.0
IODINE, PARTICULATES & TRITIUM	LUNG	9.29E-04	CHILD <sup>(2)</sup>	4000m WSW	6.19E-03	15.0

SUMMARY OF POPULATION DOSES FOR 2002			
EFFLUENT	APPLICABLE ORGAN	ESTIMATED POPULATION DOSE (person-rem)	AVERAGE DOSE TO POPULATION (rem per person)
LIQUID	TOTAL BODY	2.3E-03	1.2E-07 <sup>(3)</sup>
GASEOUS	TOTAL BODY	6.0E-03	7.7E-07 <sup>(4)</sup>

NOTES:

<sup>(1)</sup>Doses were calculated for HYPOTHETICAL receptors at the site boundary.

<sup>(2)</sup>Highest dose for nearest individual or receptor. This individual is assumed to reside at this location.

<sup>(3)</sup> Calculation based on a population of 303,500 for shore line exposure and for salt water invertebrate ingestion and 18,500 for salt water sport fish ingestion

<sup>(4)</sup> Calculation based on a population of 299,000 within fifty (50) miles of South Texas Project Electric Generating Station.

<sup>(5)</sup>Receptor 3 is an individual ingesting fresh water sport fish and receiving shoreline exposure from the Little Robbins Slough Area.



STP NUCLEAR OPERATING COMPANY  
SUMMARY OF MAXIMUM INDIVIDUAL DOSES

Unit: 1 PLUS 2

TOTAL ACCUMULATION FOR PERIODS:

for LIQUID, GASEOUS, AND AIR

Starting: 1-Jan-2002 Ending: 31-Dec-2002

EFFLUENT	APPLICABLE ORGAN	UNIT 1 ESTIMATED DOSE (mrem)	UNIT 2 ESTIMATED DOSE (mrem)	TOTAL 1+2 ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (m) (TOWARD)
LIQUID	TOTAL BODY	7.25E-03	7.65E-03	1.49E-02	ADULT	RECEPTOR 3 <sup>(5)</sup>
LIQUID	GI-TRACT	7.36E-03	7.75E-03	1.51E-02	ADULT	RECEPTOR 3 <sup>(5)</sup>
NOBLE GAS	AIR DOSE (gamma-mrad)	1.53E-03	5.38E-03	6.91E-03		1850m WNW
NOBLE GAS	AIR DOSE (beta-mrad)	5.66E-03	6.71E-03	1.24E-02		1540m NNW
NOBLE GAS	TOTAL BODY	9.16E-04	3.45E-03	4.37E-03	ALL <sup>(1)</sup>	1850m WNW
NOBLE GAS	TOTAL BODY	2.65E-04	7.43E-04	1.01E-03	ALL <sup>(2)</sup>	4000m WSW
NOBLE GAS	SKIN	2.35E-03	6.64E-03	8.99E-03	ALL <sup>(1)</sup>	1850m WNW
NOBLE GAS	SKIN	7.22E-04	1.63E-03	2.35E-03	ALL <sup>(2)</sup>	4000m WSW
IODINE, PARTICULATES & TRITIUM	GI TRACT	4.65E-03	4.04E-03	8.69E-03	CHILD <sup>(1)</sup>	1720m NW
IODINE, PARTICULATES & TRITIUM	LUNG	1.03E-03	9.29E-04	1.96E-03	CHILD <sup>(2)</sup>	4000m WSW
IODINE, PARTICULATES & TRITIUM	TOTAL BODY	7.92E-04	7.12E-04	1.50E-03	ADULT <sup>(2)</sup>	4000m WSW

SUMMARY OF POPULATION DOSES FOR 2002			
EFFLUENT	APPLICABLE ORGAN	TOTAL 1+2 ESTIMATED POPULATION DOSE (person-rem)	TOTAL 1+2 AVERAGE DOSE TO POPULATION (rem per person)
LIQUID	TOTAL BODY	4.5E-03	2.3E-07 <sup>(3)</sup>
GASEOUS	TOTAL BODY	1.2E-02	9.5E-07 <sup>(4)</sup>

NOTES:

<sup>(1)</sup>Doses were calculated for HYPOTHETICAL receptors at the site boundary.

<sup>(2)</sup>Highest dose for nearest individual or receptor. This individual is assumed to reside at this location.

<sup>(3)</sup> Calculation based on a population of 303,500 for shore line exposure and for salt water invertebrate ingestion and 18,500 for salt water sport fish ingestion.

<sup>(4)</sup> Calculation based on a population of 299,000 within fifty (50) miles of South Texas Project Electric Generating Station.

<sup>(5)</sup>Receptor 3 is an individual ingesting fresh water sport fish and receiving shoreline exposure from the Little Robbins Slough Area.

**RESULTS OF THE PROTECTED AREA DIRECT RADIATION  
MEASUREMENTS PROGRAM**

Table 8-1

2002 STEPGS PROTECTED AREA THERMOLUMINESCENT DOSIMETER MONITORING STATIONS						
Station Number	1st Qtr Average ( <sup>2</sup> )mR	2nd Qtr Average ( <sup>2</sup> )mR	3rd Qtr Average ( <sup>2</sup> )mR	4th Qtr Average ( <sup>2</sup> )mR	Average Rate ( <sup>2</sup> )mR	Average <sup>(1)</sup> Net Rate (mR/hour)
1	13.7	12.3	14.3	12.1	13.1	-0-
2	13.2	12.2	13.5	11.9	12.7	-0-
3	13.2	11.9	14.1	12.2	12.9	-0-
4	13.0	12.5	12.6	11.8	12.5	-0-
5	14.6	13.2	14.4	12.6	13.7	-0-
6	19.3	16.9	16.3	14.1	16.7	0.00057
7	20.6	16.1	16.1	14.4	16.8	0.00064
8	13.5	13.7	16.0	13.2	14.1	-0-
9	12.9	11.8	18.9	12.2	13.9	-0-
10	12.4	11.1	14.1	13.2	12.7	-0-
11	11.5	11.0	12.0	11.4	11.5	-0-
12	12.5	11.3	13.3	11.9	12.3	-0-
13	12.3	11.1	13.1	11.7	12.1	-0-
14	12.2	11.4	13.3	11.3	12.1	-0-
15	13.0	12.1	13.9	11.9	12.7	-0-
16	12.7	11.1	13.0	12.1	12.2	-0-

## Notes:

Individual values normalized to a 91 day quarter.

Only the calcium sulfate elements were used in these averages.

## (1) Net Rate:

Difference between the exposure rate in 2002 and the rate measured in 1986 due to natural background ([average rate] - 15.4 mR background) / 91 days / 24 hours per day

The 1986 background rate of 15.4 milliroentgen per quarter at the site boundary has been used to reflect the pre-operational baseline exposure rate for STP. Historically the exposure rate measured near the protected area fence has been lower than the site boundary's historical background. This year, dosimeter stations 6 and 7 had exposure rates above the site boundary's background rate. These two stations typically have the highest rates due to radioactive waste handling activities on the south sides of the Units.

Zero (0) indicates background levels.

(2) mR = milliroentgen, a unit of exposure for X and gamma rays

FIGURE 8-1  
PROTECTED AREA MONITORING STATIONS

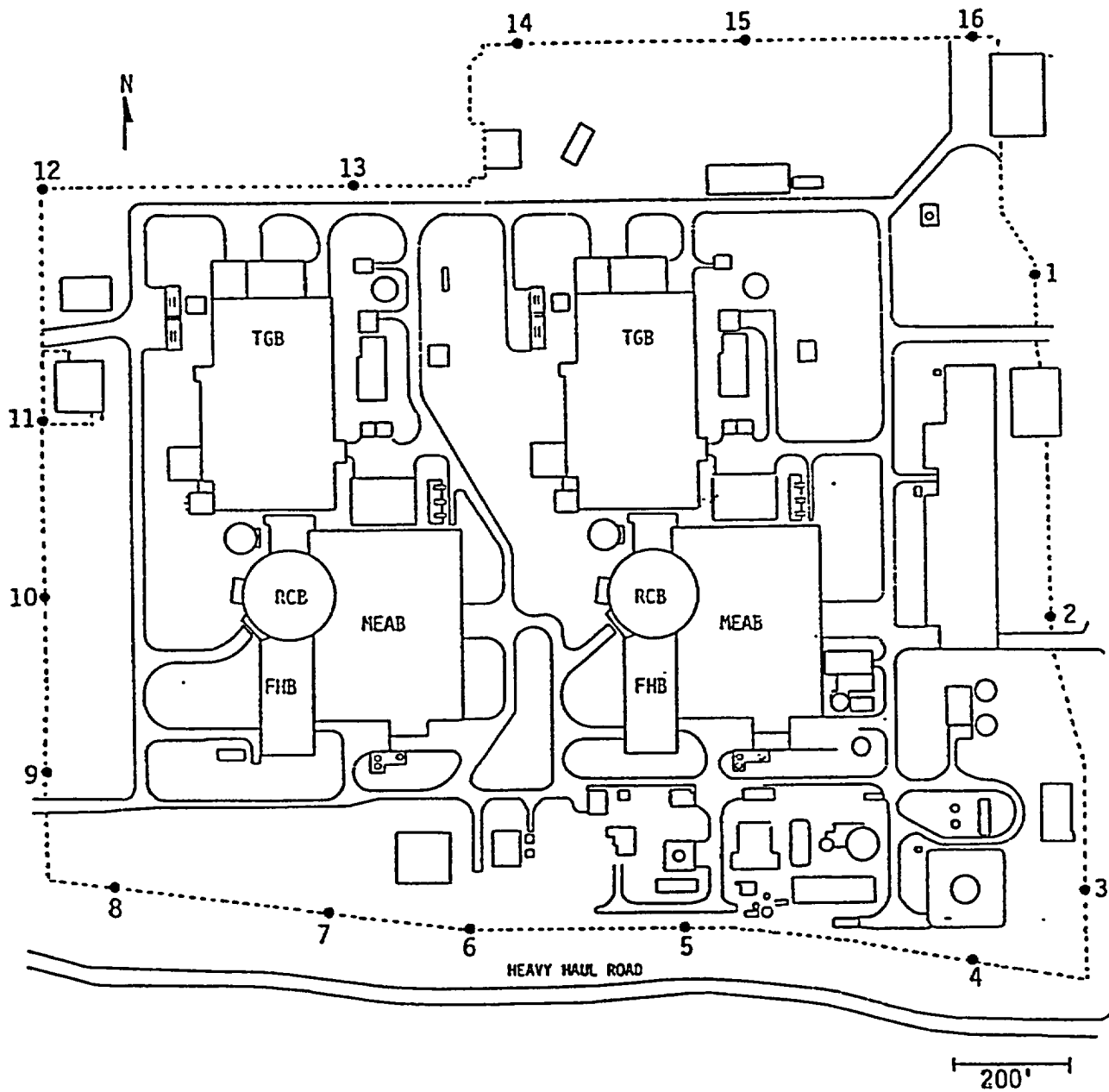


Figure 1

## Joint Frequency Tables

**First Quarter 2002  
Joint Frequency Tables**

Joint Frequency Table

From : 01/01/2002 00:00 To : 03/31/2002 23:00

PRIMARY TOWER

ALL STABILITY CLASSES COMBINED

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	9	49	86	94	53	1	0	292	13.5%	12.9
NNE	0	14	65	51	26	1	0	0	157	7.3%	8.2
NE	0	20	65	37	8	0	0	0	130	6.0%	6.9
ENE	0	14	54	27	2	0	0	0	97	4.5%	6.1
E	0	10	72	42	19	1	0	0	144	6.7%	7.7
ESE	0	13	51	64	25	2	0	0	155	7.2%	8.7
SE	0	8	59	94	58	4	0	0	223	10.3%	10.2
SSE	0	5	48	152	88	19	1	0	313	14.5%	11.4
S	0	0	40	114	40	6	0	0	200	9.3%	10.6
SSW	0	1	16	26	16	0	0	0	59	2.7%	9.8
SW	0	2	4	15	3	0	0	0	24	1.1%	8.8
WSW	0	2	1	1	1	0	0	0	5	0.2%	7.5
W	0	0	6	5	0	0	0	0	11	0.5%	7.1
WNW	0	6	17	4	3	0	0	0	30	1.4%	6.4
NW	0	13	23	23	7	2	0	0	68	3.1%	7.7
NNW	0	9	48	92	67	27	9	0	252	11.7%	12.1
Total	0	126	618	833	457	115	11	0	2160		
% Of Total	0.0%	5.8%	28.6%	38.6%	21.2%	5.3%	0.5%	0.0%			

Average speed for this table (MPH): 10.1  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

Joint Frequency Table

From : 01/01/2002 00:00 To : 03/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS A

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	1	1	8	1	0	0	11	6.2%	15.0
NNE	0	0	2	4	0	0	0	0	6	3.4%	8.3
NE	0	0	0	0	0	0	0	0	0	0.0%	0.0
ENE	0	0	0	1	0	0	0	0	1	0.6%	8.8
E	0	1	0	0	0	0	0	0	1	0.6%	1.7
ESE	0	2	0	0	0	0	0	0	2	1.1%	2.0
SE	0	1	0	4	2	1	0	0	8	4.5%	11.9
SSE	0	1	0	9	16	8	0	0	34	19.1%	15.4
S	0	0	1	31	27	4	0	0	63	35.4%	13.2
SSW	0	0	2	10	10	0	0	0	22	12.4%	11.8
SW	0	0	1	3	1	0	0	0	5	2.8%	10.6
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	1	0	1	0	0	0	2	1.1%	10.1
NW	0	1	0	0	1	1	0	0	3	1.7%	13.0
NNW	0	0	1	2	10	5	2	0	20	11.2%	16.3
Total	0	6	9	65	76	20	2	0	178		
% Of Total	0.0%	3.4%	5.1%	36.5%	42.7%	11.2%	1.1%	0.0%			

Average speed for this table (MPH): 13.3  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160



**Joint Frequency Table**

**From : 01/01/2002 00:00 To : 03/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS B**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	1	6	11	3	0	0	21	13.7%	14.4
NNE	0	0	5	6	5	0	0	0	16	10.5%	10.1
NE	0	0	0	0	1	0	0	0	1	0.7%	14.2
ENE	0	0	1	3	0	0	0	0	4	2.6%	9.1
E	0	0	3	0	0	1	0	0	4	2.6%	8.2
ESE	0	1	2	3	3	1	0	0	10	6.5%	11.2
SE	0	1	1	2	6	0	0	0	10	6.5%	12.2
SSE	0	0	1	8	7	5	0	0	21	13.7%	14.0
S	0	0	2	12	6	0	0	0	20	13.1%	11.4
SSW	0	0	6	3	0	0	0	0	9	5.9%	6.8
SW	0	0	1	0	0	0	0	0	1	0.7%	5.1
WSW	0	0	0	0	1	0	0	0	1	0.7%	14.6
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	1	0	0	0	0	0	1	0.7%	6.0
NW	0	0	2	4	0	1	0	0	7	4.6%	9.2
NNW	0	0	2	5	13	4	3	0	27	17.6%	15.8
Total	0	2	28	52	53	15	3	0	153		
% Of Total	0.0%	1.3%	18.3%	34.0%	34.6%	9.8%	2.0%	0.0%			

Average speed for this table (MPH): 12.3  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

Joint Frequency Table

From : 01/01/2002 00:00 To : 03/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS C

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	2	6	6	0	0	14	10.1%	17.9
NNE	0	0	2	3	6	0	0	0	11	8.0%	12.3
NE	0	0	3	0	1	0	0	0	4	2.9%	8.6
ENE	0	0	0	1	0	0	0	0	1	0.7%	9.8
E	0	1	2	6	1	0	0	0	10	7.2%	9.2
ESE	0	0	1	5	7	0	0	0	13	9.4%	12.5
SE	0	1	1	7	10	1	0	0	20	14.5%	12.6
SSE	0	0	0	6	16	4	0	0	26	18.8%	14.9
S	0	0	2	6	0	0	0	0	8	5.8%	8.5
SSW	0	0	1	1	1	0	0	0	3	2.2%	10.2
SW	0	0	2	1	0	0	0	0	3	2.2%	6.4
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	1	4	1	0	0	0	6	4.3%	10.3
NNW	0	0	0	9	3	3	4	0	19	13.8%	16.5
Total	0	2	15	51	52	14	4	0	138		
% Of Total	0.0%	1.4%	10.9%	37.0%	37.7%	10.1%	2.9%	0.0%			

Average speed for this table (MPH): 13.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

Joint Frequency Table

From : 01/01/2002 00:00 To : 03/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS D

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	9	55	67	43	1	0	175	20.7%	14.7
NNE	0	1	18	24	14	1	0	0	58	6.8%	9.8
NE	0	4	16	31	6	0	0	0	57	6.7%	8.7
ENE	0	2	14	17	2	0	0	0	35	4.1%	7.7
E	0	0	13	25	16	0	0	0	54	6.4%	10.3
ESE	0	2	17	31	12	1	0	0	63	7.4%	9.8
SE	0	1	11	50	33	2	0	0	97	11.5%	11.5
SSE	0	0	7	77	44	2	1	0	131	15.5%	11.7
S	0	0	8	31	6	2	0	0	47	5.5%	10.7
SSW	0	0	1	7	4	0	0	0	12	1.4%	11.4
SW	0	0	0	7	1	0	0	0	8	0.9%	9.7
WSW	0	1	0	1	0	0	0	0	2	0.2%	7.9
W	0	0	0	3	0	0	0	0	3	0.4%	9.1
WNW	0	1	2	3	1	0	0	0	7	0.8%	8.8
NW	0	0	1	6	2	0	0	0	9	1.1%	10.7
NNW	0	0	6	31	37	15	0	0	89	10.5%	14.1
Total	0	12	123	399	245	66	2	0	847		
% Of Total	0.0%	1.4%	14.5%	47.1%	28.9%	7.8%	0.2%	0.0%			

Average speed for this table (MPH): 11.7  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

**Joint Frequency Table**

**From** : 01/01/2002 00:00 **To** : 03/31/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS E**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	1	18	19	2	0	0	0	40	8.4%	8.1
NNE	0	3	13	13	1	0	0	0	30	6.3%	7.4
NE	0	2	11	3	0	0	0	0	16	3.4%	6.1
ENE	0	2	12	4	0	0	0	0	18	3.8%	5.6
E	0	0	17	9	2	0	0	0	28	5.9%	7.0
ESE	0	0	21	25	3	0	0	0	49	10.3%	7.9
SE	0	0	25	29	7	0	0	0	61	12.8%	8.7
SSE	0	2	17	48	5	0	0	0	72	15.1%	9.1
S	0	0	21	33	0	0	0	0	54	11.3%	8.0
SSW	0	1	5	5	1	0	0	0	12	2.5%	7.4
SW	0	0	0	4	1	0	0	0	5	1.1%	10.6
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	1	0	0	0	0	2	0.4%	7.3
WNW	0	0	4	1	1	0	0	0	6	1.3%	7.9
NW	0	0	6	8	3	0	0	0	17	3.6%	9.4
NNW	0	4	19	39	4	0	0	0	66	13.9%	8.5
Total	0	15	190	241	30	0	0	0	476		
% Of Total	0.0%	3.2%	39.9%	50.6%	6.3%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 8.1  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

**Joint Frequency Table**

**From** : 01/01/2002 00:00 **To** : 03/31/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS F**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	11	3	0	0	0	0	14	10.1%	6.3
NNE	0	2	10	1	0	0	0	0	13	9.4%	4.8
NE	0	3	10	0	0	0	0	0	13	9.4%	4.6
ENE	0	4	8	1	0	0	0	0	13	9.4%	5.0
E	0	3	14	2	0	0	0	0	19	13.8%	5.2
ESE	0	0	6	0	0	0	0	0	6	4.3%	4.8
SE	0	0	4	1	0	0	0	0	5	3.6%	7.2
SSE	0	2	12	2	0	0	0	0	16	11.6%	6.1
S	0	0	6	1	1	0	0	0	8	5.8%	7.3
SSW	0	0	1	0	0	0	0	0	1	0.7%	4.4
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	1	0	0	0	0	0	1	0.7%	5.1
W	0	0	3	1	0	0	0	0	4	2.9%	6.3
WNW	0	1	3	0	0	0	0	0	4	2.9%	4.5
NW	0	1	2	0	0	0	0	0	3	2.2%	4.4
NNW	0	1	11	6	0	0	0	0	18	13.0%	6.3
Total	0	17	102	18	1	0	0	0	138		
% Of Total	0.0%	12.3%	73.9%	13.0%	0.7%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 5.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

Joint Frequency Table

From : 01/01/2002 00:00 To : 03/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS G

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	8	9	0	0	0	0	0	17	7.4%	3.8
NNE	0	8	15	0	0	0	0	0	23	10.0%	3.9
NE	0	11	25	3	0	0	0	0	39	17.0%	4.9
ENE	0	6	19	0	0	0	0	0	25	10.9%	4.1
E	0	5	23	0	0	0	0	0	28	12.2%	4.6
ESE	0	8	4	0	0	0	0	0	12	5.2%	3.5
SE	0	4	17	1	0	0	0	0	22	9.6%	5.0
SSE	0	0	11	2	0	0	0	0	13	5.7%	6.2
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	2	0	0	0	0	0	0	2	0.9%	1.4
WSW	0	1	0	0	0	0	0	0	1	0.4%	2.3
W	0	0	2	0	0	0	0	0	2	0.9%	5.5
WNW	0	4	6	0	0	0	0	0	10	4.3%	4.0
NW	0	11	11	1	0	0	0	0	23	10.0%	4.0
NNW	0	4	9	0	0	0	0	0	13	5.7%	4.4
Total	0	72	151	7	0	0	0	0	230		
% Of Total	0.0%	31.3%	65.7%	3.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2160  
 Total number of hours for period : 2160

**Second Quarter 2002  
Joint Frequency Tables**

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

ALL STABILITY CLASSES COMBINED

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	12	28	34	19	0	0	0	93	4.3%	8.5
NNE	0	18	42	36	6	0	0	0	102	4.7%	7.0
NE	0	27	50	50	2	0	0	0	129	6.0%	6.6
ENE	0	25	61	19	4	0	0	0	109	5.0%	5.8
E	0	20	56	25	20	3	0	0	124	5.7%	7.7
ESE	0	19	82	83	51	3	0	0	238	11.0%	8.9
SE	0	4	116	265	159	6	0	0	550	25.5%	10.6
SSE	0	2	66	265	191	13	0	0	537	24.8%	11.6
S	0	2	23	77	58	5	0	0	165	7.6%	11.6
SSW	0	0	16	11	0	0	0	0	27	1.2%	7.4
SW	0	0	7	5	0	0	0	0	12	0.6%	7.4
WSW	0	0	3	3	0	0	0	0	6	0.3%	7.6
W	0	3	3	1	0	0	0	0	7	0.3%	5.0
WNW	0	2	5	1	0	0	0	0	8	0.4%	4.6
NW	0	6	12	2	1	0	0	0	21	1.0%	5.1
NNW	0	7	23	2	1	0	0	0	33	1.5%	5.3
Total	0	147	593	879	512	30	0	0	2161		
% Of Total	0.0%	6.8%	27.4%	40.7%	23.7%	1.4%	0.0%	0.0%			

Average speed for this table (MPH): 9.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184



**Joint Frequency Table**

**From** : 04/01/2002 00:00 **To** : 06/30/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS A**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	3	2	2	0	0	0	7	1.7%	9.9
NNE	0	0	4	7	2	0	0	0	13	3.1%	9.5
NE	0	0	3	9	0	0	0	0	12	2.9%	8.9
ENE	0	0	2	5	1	0	0	0	8	1.9%	9.2
E	0	0	1	4	3	0	0	0	8	1.9%	11.1
ESE	0	0	0	2	16	0	0	0	18	4.3%	15.1
SE	0	0	2	32	47	3	0	0	84	20.3%	13.3
SSE	0	0	1	53	83	10	0	0	147	35.5%	13.7
S	0	0	6	41	43	5	0	0	95	22.9%	12.9
SSW	0	0	3	3	0	0	0	0	6	1.4%	7.4
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	1	0	0	0	0	1	0.2%	7.9
W	0	1	1	0	0	0	0	0	2	0.5%	4.9
WNW	0	0	3	0	0	0	0	0	3	0.7%	5.2
NW	0	0	3	2	0	0	0	0	5	1.2%	6.7
NNW	0	0	5	0	0	0	0	0	5	1.2%	5.4
Total	0	1	37	161	197	18	0	0	414		
% Of Total	0.0%	0.2%	8.9%	38.9%	47.6%	4.3%	0.0%	0.0%			

Average speed for this table (MPH): 12.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS B

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	4	3	0	0	0	7	3.7%	11.7
NNE	0	0	0	4	1	0	0	0	5	2.6%	10.7
NE	0	0	1	8	1	0	0	0	10	5.2%	10.1
ENE	0	0	3	2	1	0	0	0	6	3.1%	7.7
E	0	0	2	5	4	0	0	0	11	5.8%	10.7
ESE	0	0	4	22	11	1	0	0	38	19.9%	11.3
SE	0	0	1	27	28	1	0	0	57	29.8%	12.4
SSE	0	0	4	19	16	2	0	0	41	21.5%	12.3
S	0	0	1	6	1	0	0	0	8	4.2%	11.4
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	1	0	0	0	0	0	1	0.5%	5.6
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	1	0	0	0	0	0	1	0.5%	4.3
NW	0	0	1	0	0	0	0	0	1	0.5%	5.6
NNW	0	0	5	0	0	0	0	0	5	2.6%	5.0
Total	0	0	24	97	66	4	0	0	191		
% Of Total	0.0%	0.0%	12.6%	50.8%	34.6%	2.1%	0.0%	0.0%			

Average speed for this table (MPH): 11.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS C

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	4	4	0	0	0	8	5.9%	12.1
NNE	0	0	0	5	1	0	0	0	6	4.4%	10.6
NE	0	0	2	3	1	0	0	0	6	4.4%	8.6
ENE	0	0	5	3	1	0	0	0	9	6.6%	8.0
E	0	0	4	4	3	1	0	0	12	8.8%	10.4
ESE	0	0	0	8	10	1	0	0	19	14.0%	12.7
SE	0	0	1	15	19	2	0	0	37	27.2%	13.0
SSE	0	0	2	15	9	1	0	0	27	19.9%	12.1
S	0	1	2	5	2	0	0	0	10	7.4%	8.7
SSW	0	0	1	0	0	0	0	0	1	0.7%	6.2
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	1	0	0	0	0	0	1	0.7%	4.1
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	1	18	62	50	5	0	0	136		
% Of Total	0.0%	0.7%	13.2%	45.6%	36.8%	3.7%	0.0%	0.0%			

Average speed for this table (MPH): 11.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

**Joint Frequency Table**

**From** : 04/01/2002 00:00 **To** : 06/30/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS D**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
Sector											
N	0	1	3	21	10	0	0	0	35	5.3%	10.8
NNE	0	0	5	10	2	0	0	0	17	2.6%	9.4
NE	0	1	5	23	0	0	0	0	29	4.4%	9.1
ENE	0	3	9	4	1	0	0	0	17	2.6%	6.6
E	0	0	8	9	10	2	0	0	29	4.4%	11.2
ESE	0	0	12	34	14	1	0	0	61	9.2%	10.2
SE	0	0	20	129	62	0	0	0	211	31.7%	11.0
SSE	0	0	11	113	83	0	0	0	207	31.1%	12.0
S	0	0	3	14	12	0	0	0	29	4.4%	11.4
SSW	0	0	8	6	0	0	0	0	14	2.1%	7.8
SW	0	0	2	2	0	0	0	0	4	0.6%	8.0
WSW	0	0	1	2	0	0	0	0	3	0.5%	8.0
W	0	0	1	0	0	0	0	0	1	0.2%	7.3
WNW	0	0	1	1	0	0	0	0	2	0.3%	6.6
NW	0	0	3	0	0	0	0	0	3	0.5%	5.4
NNW	0	0	2	0	1	0	0	0	3	0.5%	8.9
Total	0	5	94	368	195	3	0	0	665		
% Of Total	0.0%	0.8%	14.1%	55.3%	29.3%	0.5%	0.0%	0.0%			

Average speed for this table (MPH): 10.9  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS E

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	3	10	3	0	0	0	0	16	3.4%	5.9
NNE	0	0	13	8	0	0	0	0	21	4.5%	7.0
NE	0	3	11	6	0	0	0	0	20	4.3%	6.3
ENE	0	4	27	5	0	0	0	0	36	7.7%	5.6
E	0	4	24	3	0	0	0	0	31	6.7%	5.8
ESE	0	6	37	17	0	0	0	0	60	12.9%	6.3
SE	0	0	61	60	3	0	0	0	124	26.7%	7.9
SSE	0	2	40	65	0	0	0	0	107	23.0%	8.0
S	0	0	11	11	0	0	0	0	22	4.7%	8.0
SSW	0	0	4	2	0	0	0	0	6	1.3%	6.7
SW	0	0	3	3	0	0	0	0	6	1.3%	7.7
WSW	0	0	2	0	0	0	0	0	2	0.4%	6.7
W	0	0	0	1	0	0	0	0	1	0.2%	8.7
WNW	0	1	0	0	0	0	0	0	1	0.2%	2.1
NW	0	2	2	0	1	0	0	0	5	1.1%	5.6
NNW	0	0	5	2	0	0	0	0	7	1.5%	7.3
Total	0	25	250	186	4	0	0	0	465		
% Of Total	0.0%	5.4%	53.8%	40.0%	0.9%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 7.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS F

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	6	10	0	0	0	0	0	16	8.4%	4.0
NNE	0	11	12	2	0	0	0	0	25	13.1%	4.3
NE	0	7	10	1	0	0	0	0	18	9.4%	4.1
ENE	0	4	12	0	0	0	0	0	16	8.4%	4.3
E	0	10	15	0	0	0	0	0	25	13.1%	3.9
ESE	0	9	25	0	0	0	0	0	34	17.8%	4.6
SE	0	2	29	2	0	0	0	0	33	17.3%	5.1
SSE	0	0	5	0	0	0	0	0	5	2.6%	4.9
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	1	0	0	0	0	0	1	0.5%	5.2
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	2	1	0	0	0	0	0	3	1.6%	3.2
WNW	0	1	0	0	0	0	0	0	1	0.5%	1.7
NW	0	2	2	0	0	0	0	0	4	2.1%	3.4
NNW	0	6	4	0	0	0	0	0	10	5.2%	3.6
Total	0	60	126	5	0	0	0	0	191		
% Of Total	0.0%	31.4%	66.0%	2.6%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.3  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

Joint Frequency Table

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS G

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	2	2	0	0	0	0	0	4	4.0%	3.2
NNE	0	7	8	0	0	0	0	0	15	15.2%	3.8
NE	0	16	18	0	0	0	0	0	34	34.3%	3.8
ENE	0	14	3	0	0	0	0	0	17	17.2%	3.1
E	0	6	2	0	0	0	0	0	8	8.1%	3.0
ESE	0	4	4	0	0	0	0	0	8	8.1%	3.5
SE	0	2	2	0	0	0	0	0	4	4.0%	3.1
SSE	0	0	3	0	0	0	0	0	3	3.0%	3.7
S	0	1	0	0	0	0	0	0	1	1.0%	3.5
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	2	0	0	0	0	0	0	2	2.0%	2.9
NNW	0	1	2	0	0	0	0	0	3	3.0%	3.4
Total	0	55	44	0	0	0	0	0	99		
% Of Total	0.0%	55.6%	44.4%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 3.5  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 23  
 Total number of Valid hours : 2161  
 Total number of hours for period : 2184

**Third Quarter 2002  
Joint Frequency Tables**



Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

ALL STABILITY CLASSES COMBINED

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	1	16	30	21	23	0	0	0	91	4.1%	8.5
NNE	0	32	102	81	24	2	0	1	242	11.0%	7.6
NE	0	38	79	58	12	0	0	0	187	8.5%	6.7
ENE	0	32	51	38	5	0	0	0	126	5.7%	6.3
E	0	38	52	27	9	0	0	0	126	5.7%	6.2
ESE	0	31	47	42	4	0	0	0	124	5.6%	6.4
SE	0	11	119	102	29	0	0	0	261	11.8%	7.9
SSE	0	6	162	140	32	0	0	0	340	15.4%	8.3
S	0	3	67	236	35	0	0	0	341	15.5%	9.4
SSW	0	2	58	35	3	0	0	0	98	4.4%	7.5
SW	0	1	22	33	0	0	0	0	56	2.5%	7.8
WSW	0	1	7	4	0	0	0	0	12	0.5%	7.0
W	0	5	15	1	0	0	0	0	21	1.0%	4.4
WNW	0	17	21	1	0	0	0	0	39	1.8%	4.0
NW	0	15	32	10	0	0	0	0	57	2.6%	4.8
NNW	0	31	32	17	6	0	0	0	86	3.9%	5.9
Total	1	279	896	846	182	2	0	1	2207		
% Of Total	0.0%	12.6%	40.6%	38.3%	8.2%	0.1%	0.0%	0.0%			

Average speed for this table (MPH): 7.5  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS A

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	3	2	5	0	0	0	10	3.4%	10.6
NNE	0	4	4	2	1	1	0	0	12	4.0%	6.9
NE	0	1	2	3	0	0	0	0	6	2.0%	6.3
ENE	0	1	0	3	0	0	0	0	4	1.3%	8.6
E	0	1	2	0	0	0	0	0	3	1.0%	4.0
ESE	0	1	1	3	0	0	0	0	5	1.7%	8.3
SE	0	0	1	10	4	0	0	0	15	5.0%	10.9
SSE	0	0	6	20	14	0	0	0	40	13.4%	11.0
S	0	0	10	100	23	0	0	0	133	44.6%	10.2
SSW	0	1	18	13	0	0	0	0	32	10.7%	7.5
SW	0	0	6	7	0	0	0	0	13	4.4%	7.4
WSW	0	1	1	1	0	0	0	0	3	1.0%	6.1
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	2	4	1	0	0	0	0	7	2.3%	4.9
NW	0	0	2	2	0	0	0	0	4	1.3%	6.0
NNW	0	1	0	6	4	0	0	0	11	3.7%	10.4
Total	0	13	60	173	51	1	0	0	298		
% Of Total	0.0%	4.4%	20.1%	58.1%	17.1%	0.3%	0.0%	0.0%			

Average speed for this table (MPH): 9.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

**Joint Frequency Table**

**From** : 07/01/2002 00:00 **To** : 09/30/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS B**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	3	1	4	0	0	0	8	5.3%	11.0
NNE	0	0	4	5	1	0	0	0	10	6.6%	8.5
NE	0	1	5	8	0	0	0	0	14	9.3%	7.7
ENE	0	0	3	3	0	0	0	0	6	4.0%	8.7
E	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	1	0	4	1	0	0	0	6	4.0%	9.0
SE	0	0	1	11	8	0	0	0	20	13.2%	11.8
SSE	0	0	5	12	4	0	0	0	21	13.9%	10.1
S	0	0	8	33	2	0	0	0	43	28.5%	9.0
SSW	0	0	2	2	0	0	0	0	4	2.6%	7.5
SW	0	0	1	2	0	0	0	0	3	2.0%	8.2
WSW	0	0	1	1	0	0	0	0	2	1.3%	8.4
W	0	0	2	0	0	0	0	0	2	1.3%	5.4
WNW	0	0	5	0	0	0	0	0	5	3.3%	5.1
NW	0	0	2	0	0	0	0	0	2	1.3%	5.3
NNW	0	0	3	1	1	0	0	0	5	3.3%	8.6
Total	0	2	45	83	21	0	0	0	151		
% Of Total	0.0%	1.3%	29.8%	55.0%	13.9%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS C

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1 0 -3.5	(3) 3 6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	1	1	2	0	0	0	4	2.9%	12.4
NNE	0	1	8	3	4	1	0	0	17	12.5%	8.9
NE	0	1	5	7	3	0	0	0	16	11.8%	9.4
ENE	0	1	3	6	0	0	0	0	10	7.4%	8.2
E	0	0	1	1	0	0	0	0	2	1.5%	8.6
ESE	0	0	1	8	0	0	0	0	9	6.6%	9.2
SE	0	0	2	10	8	0	0	0	20	14.7%	11.6
SSE	0	0	4	13	3	0	0	0	20	14.7%	9.6
S	0	0	6	8	4	0	0	0	18	13.2%	9.6
SSW	0	0	1	1	0	0	0	0	2	1.5%	7.6
SW	0	0	2	1	0	0	0	0	3	2.2%	8.0
WSW	0	0	1	2	0	0	0	0	3	2.2%	8.1
W	0	0	1	1	0	0	0	0	2	1.5%	6.5
WNW	0	0	2	0	0	0	0	0	2	1.5%	4.4
NW	0	0	3	0	0	0	0	0	3	2.2%	5.1
NNW	0	0	2	2	1	0	0	0	5	3.7%	9.3
Total	0	3	43	64	25	1	0	0	136		
% Of Total	0.0%	2.2%	31.6%	47.1%	18.4%	0.7%	0.0%	0.0%			

Average speed for this table (MPH): 9.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS D

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	2	8	3	10	0	0	0	23	4.9%	10.4
NNE	0	1	21	33	16	0	0	0	71	15.3%	9.3
NE	0	4	21	27	8	0	0	0	60	12.9%	8.4
ENE	0	2	9	18	5	0	0	0	34	7.3%	8.6
E	0	3	9	18	6	0	0	0	36	7.7%	9.2
ESE	0	2	5	17	1	0	0	0	25	5.4%	8.5
SE	0	1	9	34	8	0	0	0	52	11.2%	9.8
SSE	0	0	11	37	7	0	0	0	55	11.8%	9.8
S	0	2	14	42	3	0	0	0	61	13.1%	9.0
SSW	0	0	9	3	1	0	0	0	13	2.8%	7.6
SW	0	0	2	6	0	0	0	0	8	1.7%	9.1
WSW	0	0	1	0	0	0	0	0	1	0.2%	6.9
W	0	0	2	0	0	0	0	0	2	0.4%	6.1
WNW	0	0	2	0	0	0	0	0	2	0.4%	5.7
NW	0	1	6	1	0	0	0	0	8	1.7%	4.8
NNW	0	4	4	6	0	0	0	0	14	3.0%	6.4
Total	0	22	133	245	65	0	0	0	465		
% Of Total	0.0%	4.7%	28.6%	52.7%	14.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS E

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	1	7	14	2	0	0	0	24	3.5%	9.0
NNE	0	2	28	38	2	0	0	1	71	10.3%	8.5
NE	0	4	21	12	1	0	0	0	38	5.5%	6.7
ENE	0	5	17	8	0	0	0	0	30	4.4%	6.1
E	0	5	21	8	3	0	0	0	37	5.4%	6.6
ESE	0	2	21	10	2	0	0	0	35	5.1%	7.2
SE	0	1	48	36	1	0	0	0	86	12.5%	7.3
SSE	0	2	108	51	4	0	0	0	165	24.1%	7.3
S	0	0	28	51	3	0	0	0	82	12.0%	8.6
SSW	0	0	27	16	2	0	0	0	45	6.6%	7.5
SW	0	0	11	17	0	0	0	0	28	4.1%	7.8
WSW	0	0	3	0	0	0	0	0	3	0.4%	5.8
W	0	0	3	0	0	0	0	0	3	0.4%	5.3
WNW	0	3	4	0	0	0	0	0	7	1.0%	4.2
NW	0	2	5	6	0	0	0	0	13	1.9%	6.5
NNW	0	4	13	2	0	0	0	0	19	2.8%	5.5
Total	0	31	365	269	20	0	0	1	686		
% Of Total	0.0%	4.5%	53.2%	39.2%	2.9%	0.0%	0.0%	0.1%			

Average speed for this table (MPH): 7.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency TableFrom : 07/01/2002 00:00 To : 09/30/2002 23:00PRIMARY TOWERSTABILITY CLASS F

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	3	5	0	0	0	0	0	8	2.8%	4.8
NNE	0	6	20	0	0	0	0	0	26	9.1%	4.5
NE	0	8	11	1	0	0	0	0	20	7.0%	4.1
ENE	0	12	16	0	0	0	0	0	28	9.8%	3.7
E	0	16	18	0	0	0	0	0	34	11.9%	4.0
ESE	0	15	14	0	0	0	0	0	29	10.1%	3.5
SE	0	8	55	1	0	0	0	0	64	22.4%	4.4
SSE	0	4	28	7	0	0	0	0	39	13.6%	5.8
S	0	1	1	2	0	0	0	0	4	1.4%	7.3
SSW	0	1	1	0	0	0	0	0	2	0.7%	3.4
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	3	5	0	0	0	0	0	8	2.8%	3.5
WNW	0	3	3	0	0	0	0	0	6	2.1%	3.3
NW	0	6	6	1	0	0	0	0	13	4.5%	4.0
NNW	0	1	4	0	0	0	0	0	5	1.7%	5.2
Total	0	87	187	12	0	0	0	0	286		
% Of Total	0.0%	30.4%	65.4%	4.2%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208

Joint Frequency Table

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS G

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	1	10	3	0	0	0	0	0	14	7.6%	2.9
NNE	0	18	17	0	0	0	0	0	35	18.9%	3.6
NE	0	19	14	0	0	0	0	0	33	17.8%	3.5
ENE	0	11	3	0	0	0	0	0	14	7.6%	3.0
E	0	13	1	0	0	0	0	0	14	7.6%	2.8
ESE	0	10	5	0	0	0	0	0	15	8.1%	3.1
SE	0	1	3	0	0	0	0	0	4	2.2%	3.8
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	1	0	0	0	0	0	0	1	0.5%	2.5
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	2	2	0	0	0	0	0	4	2.2%	2.9
WNW	0	9	1	0	0	0	0	0	10	5.4%	2.7
NW	0	6	8	0	0	0	0	0	14	7.6%	3.4
NNW	0	21	6	0	0	0	0	0	27	14.6%	3.2
Total	1	121	63	0	0	0	0	0	185		
% Of Total	0.5%	65.4%	34.1%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 3.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 1  
 Total number of Valid hours : 2207  
 Total number of hours for period : 2208



**Fourth Quarter 2002  
Joint Frequency Tables**

Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

ALL STABILITY CLASSES COMBINED

Wind Speed (MPH) -> Sector	(1) CALM	(2) 10 -3.5	(3) 36 -7.5	(4) 76 -12.5	(5) 126 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 326+	Total	% Of Total	Avg. Speed
N	0	11	76	108	40	1	0	0	236	10.7%	9.0
NNE	1	22	92	95	17	0	0	0	227	10.3%	7.6
NE	0	21	100	79	27	0	0	0	227	10.3%	7.8
ENE	0	23	83	58	12	0	0	0	176	8.0%	7.1
E	0	17	71	47	8	0	0	0	143	6.5%	7.0
ESE	0	11	69	24	12	0	0	0	116	5.3%	6.9
SE	0	9	54	35	8	2	0	0	108	4.9%	7.6
SSE	0	5	60	48	47	9	0	0	169	7.7%	10.0
S	0	9	53	77	19	1	0	0	159	7.2%	8.8
SSW	0	3	27	46	12	0	0	0	88	4.0%	8.6
SW	0	3	11	10	5	0	0	0	29	1.3%	8.2
WSW	0	1	1	0	1	0	0	0	3	0.1%	7.4
W	0	7	25	3	0	0	0	0	35	1.6%	5.0
WNW	0	15	38	12	2	1	0	0	68	3.1%	5.8
NW	0	24	55	28	27	1	0	0	135	6.1%	7.9
NNW	0	22	122	86	58	1	0	0	289	13.1%	8.5
Total	1	203	937	756	295	16	0	0	2208		
% Of Total	0.0%	9.2%	42.4%	34.2%	13.4%	0.7%	0.0%	0.0%			

Average speed for this table (MPH): 8.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

**Joint Frequency Table**

**From** : 10/01/2002 00:00 **To** : 12/31/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS A**

Wind Speed (MPH) ->  Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	1	8	9	0	0	0	18	8.3%	12.0
NNE	0	0	7	8	2	0	0	0	17	7.9%	9.2
NE	0	0	3	5	4	0	0	0	12	5.6%	10.9
ENE	0	0	2	2	0	0	0	0	4	1.9%	8.0
E	0	0	0	2	0	0	0	0	2	0.9%	9.1
ESE	0	0	1	4	2	0	0	0	7	3.2%	10.9
SE	0	0	2	14	4	0	0	0	20	9.3%	11.1
SSE	0	0	4	2	5	3	0	0	14	6.5%	13.9
S	0	0	7	21	4	1	0	0	33	15.3%	9.9
SSW	0	0	5	9	9	0	0	0	23	10.6%	10.7
SW	0	0	0	0	2	0	0	0	2	0.9%	14.8
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	0	0	0	0	0	1	0.5%	5.9
WNW	0	0	0	5	1	0	0	0	6	2.8%	10.5
NW	0	0	6	2	9	1	0	0	18	8.3%	12.7
NNW	0	0	7	22	10	0	0	0	39	18.1%	10.2
Total	0	0	46	104	61	5	0	0	216		
% Of Total	0.0%	0.0%	21.3%	48.1%	28.2%	2.3%	0.0%	0.0%			

Average speed for this table (MPH): 10.9  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS B

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
Sector											
N	0	0	1	4	3	0	0	0	8	8.4%	10.8
NNE	0	0	1	8	2	0	0	0	11	11.6%	9.9
NE	0	0	4	3	1	0	0	0	8	8.4%	8.0
ENE	0	1	1	3	1	0	0	0	6	6.3%	8.6
E	0	0	2	0	0	0	0	0	2	2.1%	4.7
ESE	0	0	1	4	4	0	0	0	9	9.5%	11.4
SE	0	0	2	5	1	0	0	0	8	8.4%	9.1
SSE	0	1	2	2	2	0	0	0	7	7.4%	9.0
S	0	0	3	5	5	0	0	0	13	13.7%	11.2
SSW	0	0	3	1	1	0	0	0	5	5.3%	7.7
SW	0	0	0	0	1	0	0	0	1	1.1%	13.2
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	0	0	0	0	0	1	1.1%	5.2
WNW	0	0	3	1	0	0	0	0	4	4.2%	6.6
NW	0	0	1	0	2	0	0	0	3	3.2%	12.9
NNW	0	0	3	5	1	0	0	0	9	9.5%	9.2
Total	0	2	28	41	24	0	0	0	95		
% Of Total	0.0%	2.1%	29.5%	43.2%	25.3%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS C

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	7	4	1	0	0	0	12	14.0%	8.5
NNE	0	0	2	1	1	0	0	0	4	4.7%	8.5
NE	0	0	3	3	2	0	0	0	8	9.3%	9.2
ENE	0	0	5	5	1	0	0	0	11	12.8%	8.3
E	0	1	4	4	1	0	0	0	10	11.6%	7.9
ESE	0	0	1	3	0	0	0	0	4	4.7%	8.6
SE	0	1	0	3	0	0	0	0	4	4.7%	7.7
SSE	0	0	4	2	1	0	0	0	7	8.1%	8.7
S	0	0	4	3	3	0	0	0	10	11.6%	9.3
SSW	0	0	0	1	0	0	0	0	1	1.2%	10.5
SW	0	0	1	2	0	0	0	0	3	3.5%	9.4
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	0	0	0	0	0	1	1.2%	4.2
WNW	0	0	0	0	1	0	0	0	1	1.2%	15.3
NW	0	1	2	0	2	0	0	0	5	5.8%	9.8
NNW	0	0	4	1	0	0	0	0	5	5.8%	6.7
Total	0	3	38	32	13	0	0	0	86		
% Of Total	0.0%	3.5%	44.2%	37.2%	15.1%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 8.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS D

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	2	24	63	24	0	0	0	113	16.0%	9.8
NNE	0	2	24	54	12	0	0	0	92	13.0%	9.1
NE	0	1	9	56	19	0	0	0	85	12.0%	10.5
ENE	0	2	13	38	10	0	0	0	63	8.9%	9.8
E	0	2	10	22	6	0	0	0	40	5.7%	9.3
ESE	0	1	11	5	5	0	0	0	22	3.1%	8.3
SE	0	0	8	9	1	2	0	0	20	2.8%	9.6
SSE	0	1	4	13	13	6	0	0	37	5.2%	12.4
S	0	2	14	19	5	0	0	0	40	5.7%	8.6
SSW	0	2	7	13	2	0	0	0	24	3.4%	8.3
SW	0	1	0	3	2	0	0	0	6	0.8%	10.1
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	1	0	0	0	0	2	0.3%	7.8
WNW	0	1	5	1	0	1	0	0	8	1.1%	8.0
NW	0	3	14	16	11	0	0	0	44	6.2%	9.1
NNW	0	4	28	31	46	1	0	0	110	15.6%	10.6
Total	0	24	172	344	156	10	0	0	706		
% Of Total	0.0%	3.4%	24.4%	48.7%	22.1%	1.4%	0.0%	0.0%			

Average speed for this table (MPH): 9.8  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS E

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	1	18	26	3	1	0	0	49	9.0%	8.5
NNE	0	3	15	23	0	0	0	0	41	7.5%	7.7
NE	0	4	46	12	1	0	0	0	63	11.5%	6.4
ENE	0	1	24	10	0	0	0	0	35	6.4%	6.5
E	0	1	20	19	1	0	0	0	41	7.5%	7.5
ESE	0	2	21	8	1	0	0	0	32	5.9%	6.6
SE	0	2	17	3	2	0	0	0	24	4.4%	7.0
SSE	0	2	16	26	26	0	0	0	70	12.8%	10.3
S	0	3	13	25	2	0	0	0	43	7.9%	8.6
SSW	0	0	9	22	0	0	0	0	31	5.7%	7.8
SW	0	1	9	5	0	0	0	0	15	2.7%	6.5
WSW	0	0	1	0	1	0	0	0	2	0.4%	9.6
W	0	1	2	1	0	0	0	0	4	0.7%	6.0
WNW	0	2	6	5	0	0	0	0	13	2.4%	6.3
NW	0	2	9	6	3	0	0	0	20	3.7%	7.7
NNW	0	2	35	25	1	0	0	0	63	11.5%	7.5
Total	0	27	261	216	41	1	0	0	546		
% Of Total	0.0%	4.9%	47.8%	39.6%	7.5%	0.2%	0.0%	0.0%			

Average speed for this table (MPH): 7.8  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

**Joint Frequency Table**

**From** : 10/01/2002 00:00 **To** : 12/31/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS F**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	3	14	3	0	0	0	0	20	7.4%	5.8
NNE	0	6	24	1	0	0	0	0	31	11.5%	4.9
NE	0	4	16	0	0	0	0	0	20	7.4%	4.5
ENE	0	5	10	0	0	0	0	0	15	5.6%	4.5
E	0	8	16	0	0	0	0	0	24	8.9%	4.6
ESE	0	5	22	0	0	0	0	0	27	10.0%	4.9
SE	0	2	17	1	0	0	0	0	20	7.4%	4.7
SSE	0	1	12	2	0	0	0	0	15	5.6%	5.3
S	0	3	11	4	0	0	0	0	18	6.7%	6.0
SSW	0	1	3	0	0	0	0	0	4	1.5%	4.5
SW	0	1	1	0	0	0	0	0	2	0.7%	4.5
WSW	0	1	0	0	0	0	0	0	1	0.4%	3.0
W	0	2	5	1	0	0	0	0	8	3.0%	5.6
WNW	0	6	7	0	0	0	0	0	13	4.8%	3.9
NW	0	6	12	3	0	0	0	0	21	7.8%	5.1
NNW	0	2	26	2	0	0	0	0	30	11.2%	5.4
Total	0	56	196	17	0	0	0	0	269		
% Of Total	0.0%	20.8%	72.9%	6.3%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 5.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208



Joint Frequency Table

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS G

Wind Speed (MPH) ->  Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	5	11	0	0	0	0	0	16	5.5%	4.5
NNE	1	11	19	0	0	0	0	0	31	10.7%	3.8
NE	0	12	19	0	0	0	0	0	31	10.7%	3.7
ENE	0	14	28	0	0	0	0	0	42	14.5%	3.8
E	0	5	19	0	0	0	0	0	24	8.3%	4.3
ESE	0	3	12	0	0	0	0	0	15	5.2%	4.3
SE	0	4	8	0	0	0	0	0	12	4.1%	3.5
SSE	0	0	18	1	0	0	0	0	19	6.6%	6.2
S	0	1	1	0	0	0	0	0	2	0.7%	3.3
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	4	14	0	0	0	0	0	18	6.2%	4.1
WNW	0	6	17	0	0	0	0	0	23	7.9%	4.2
NW	0	12	11	1	0	0	0	0	24	8.3%	3.7
NNW	0	14	19	0	0	0	0	0	33	11.4%	4.1
Total	1	91	196	2	0	0	0	0	290		
% Of Total	0.3%	31.4%	67.6%	0.7%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.1  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2208  
 Total number of hours for period : 2208

**First Quarter 2002  
Batch Releases  
Joint Frequency Tables**

No batch releases were made during this time period.

**Second Quarter 2002  
Batch Releases  
Joint Frequency Tables**

The following periods represent times during which the release rates from one of the units was significantly higher than normal (> 30 uCi/s). Consequently, these meteorological data are submitted as batch release periods .

From	To
05/07/2002 15:00	05/07/2002 17:00

**Joint Frequency Table - Batch Release Hours**

**From : 04/01/2002 00:00 To : 06/30/2002 23:00**

**PRIMARY TOWER**

**ALL STABILITY CLASSES COMBINED**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0%	0.0
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	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	2	0	0	0	2	100 %	15.9
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	0	0	2	0	0	0	2		
% Of Total	0.0%	0.0%	0.0%	0.0%	100 %	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 15.9  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

Joint Frequency Table - Batch Release Hours

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS A

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0%	0.0
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	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	2	0	0	0	2	100 %	15.9
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	0	0	2	0	0	0	2		
% Of Total	0.0%	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 15.9  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

**Joint Frequency Table - Batch Release Hours**

**From : 04/01/2002 00:00 To : 06/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS B**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0%	0.0
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	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

**Joint Frequency Table - Batch Release Hours**

**From : 04/01/2002 00:00 To : 06/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS C**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

**Joint Frequency Table - Batch Release Hours**

**From : 04/01/2002 00:00 To : 06/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS D**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2



Joint Frequency Table - Batch Release Hours

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS E

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

**Joint Frequency Table - Batch Release Hours**

**From : 04/01/2002 00:00 To : 06/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS F**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

Average speed for this table (MPH): 0.0  
 Hours in. above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

Joint Frequency Table - Batch Release Hours

From : 04/01/2002 00:00 To : 06/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS G

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 2  
 Total number of hours for period : 2

**Third Quarter 2002  
Batch Releases  
Joint Frequency Tables**

The following periods represent times during which the release rates from one of the units was significantly higher than normal (> 30 uCi/s). Consequently, these meteorological data are submitted as batch release periods .

From	To
07/13/2002 16:00	07/13/2002 18:00
09/09/2002 11:00	09/09/2002 15:00
09/11/2002 09:00	09/11/2002 13:00
09/30/2002 20:00	10/01/2002 00:00

**Joint Frequency Table - Batch Release Hours**

**From : 07/01/2002 00:00 To : 09/30/2002 23:00**

**PRIMARY TOWER**

**ALL STABILITY CLASSES COMBINED**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	2	0	0	0	0	2	14.3%	8.8
NE	0	0	0	1	0	0	0	0	1	7.1%	10.0
ENE	0	0	1	3	0	0	0	0	4	28.6%	8.4
E	0	0	4	0	0	0	0	0	4	28.6%	6.1
ESE	0	0	0	1	0	0	0	0	1	7.1%	9.7
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	1	0	0	0	0	1	7.1%	11.6
SSW	0	0	0	1	0	0	0	0	1	7.1%	11.2
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	5	9	0	0	0	0	14		
% Of Total	0.0%	0.0%	35.7%	64.3%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 8.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

**Joint Frequency Table - Batch Release Hours**

**From : 07/01/2002 00:00 To : 09/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS A**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0%	0.0
NE	0	0	0	0	0	0	0	0	0	0.0%	0.0
ENE	0	0	0	1	0	0	0	0	1	33.3%	10.0
E	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	1	0	0	0	0	1	33.3%	11.6
SSW	0	0	0	1	0	0	0	0	1	33.3%	11.2
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	0	3	0	0	0	0	3		
% Of Total	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 10.9  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

**Joint Frequency Table - Batch Release Hours**

**From : 07/01/2002 00:00 To : 09/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS B**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours, in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

Joint Frequency Table - Batch Release Hours

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS C

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	1	0	0	0	0	1	25.0%	9.1
NE	0	0	0	1	0	0	0	0	1	25.0%	10.0
ENE	0	0	0	2	0	0	0	0	2	50.0%	9.6
E	0	0	0	0	0	0	0	0	0	0.0%	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	0	4	0	0	0	0	4		
% Of Total	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14



Joint Frequency Table - Batch Release Hours

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS D

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	1	0	0	0	0	1	33.3%	8.4
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	0	0	1	0	0	0	0	0	1	33.3%	7.4
ESE	0	0	0	1	0	0	0	0	1	33.3%	9.7
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	1	2	0	0	0	0	3		
% Of Total	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 8.5  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

Joint Frequency Table - Batch Release Hours

From : 07/01/2002 00:00 To : 09/30/2002 23:00

PRIMARY TOWER

STABILITY CLASS E

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction.: 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

**Joint Frequency Table - Batch Release Hours**

**From : 07/01/2002 00:00 To : 09/30/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS F**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0%	0.0
NE	0	0	0	0	0	0	0	0	0	0.0%	0.0
ENE	0	0	1	0	0	0	0	0	1	25.0%	4.3
E	0	0	3	0	0	0	0	0	3	75.0%	5.6
ESE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SE	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0%	0.0
S	0	0	0	0	0	0	0	0	0	0.0%	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
Total	0	0	4	0	0	0	0	0	4		
% Of Total	0.0%	0.0%	100 %	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 5.3  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

**Joint Frequency Table - Batch Release Hours**

**From** : 07/01/2002 00:00 **To** : 09/30/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS G**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
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	0	0	0	0	0	0	0	0	0	0.0 %	0.0
ESE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSE	0	0	0	0	0	0	0	0	0	0.0 %	0.0
S	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
SW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
W	0	0	0	0	0	0	0	0	0	0.0 %	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
NNW	0	0	0	0	0	0	0	0	0	0.0 %	0.0
Total	0	0	0	0	0	0	0	0	0		
% Of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 0.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 0  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 14  
 Total number of hours for period : 14

### Fourth Quarter 2002 Batch Releases Joint Frequency Tables

The following periods represent times during which the release rates from one of the units was significantly higher than normal (> 30 uCi/s). Consequently, these meteorological data are submitted as batch release periods .

From	To
10/01/2002 00:00	10/02/2002 12:00
10/02/2002 15:00	10/07/2002 09:00
10/07/2002 13:00	10/08/2002 22:00
10/09/2002 02:00	11/08/2002 18:00
11/08/2002 19:00	11/11/2002 07:00
11/11/2002 13:00	11/19/2002 16:00
11/19/2002 17:00	11/26/2002 15:00
11/26/2002 17:00	12/05/2002 15:00

**Joint Frequency Table - Batch Release Hours**

**From** : 10/01/2002 00:00 **To** : 12/31/2002 23:00

**PRIMARY TOWER**

**ALL STABILITY CLASSES COMBINED**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	8	63	99	38	1	0	0	209	13.4%	9.2
NNE	1	16	74	79	13	0	0	0	183	11.8%	7.6
NE	0	11	70	54	22	0	0	0	157	10.1%	8.0
ENE	0	15	73	34	11	0	0	0	133	8.6%	6.9
E	0	14	50	18	2	0	0	0	84	5.4%	6.1
ESE	0	10	56	14	3	0	0	0	83	5.3%	6.0
SE	0	8	47	29	4	0	0	0	88	5.7%	7.0
SSE	0	5	45	24	20	1	0	0	95	6.1%	8.4
S	0	9	36	36	2	0	0	0	83	5.3%	7.3
SSW	0	2	19	38	8	0	0	0	67	4.3%	8.5
SW	0	3	10	9	4	0	0	0	26	1.7%	7.9
WSW	0	1	1	0	1	0	0	0	3	0.2%	7.4
W	0	6	16	1	0	0	0	0	23	1.5%	4.3
WNW	0	14	20	6	0	0	0	0	40	2.6%	4.7
NW	0	16	32	14	0	0	0	0	62	4.0%	5.5
NNW	0	17	91	66	44	0	0	0	218	14.0%	8.5
Total	1	155	703	521	172	2	0	0	1554		
% Of Total	0.1%	10.0%	45.2%	33.5%	11.1%	0.1%	0.0%	0.0%			

Average speed for this table (MPH) : 7.6  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

**Joint Frequency Table - Batch Release Hours**

**From : 10/01/2002 00:00 To : 12/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS A**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	0	1	8	9	0	0	0	18	10.5%	12.0
NNE	0	0	4	5	2	0	0	0	11	6.4%	9.8
NE	0	0	3	3	4	0	0	0	10	5.8%	10.8
ENE	0	0	2	1	0	0	0	0	3	1.8%	7.0
E	0	0	0	2	0	0	0	0	2	1.2%	9.1
ESE	0	0	1	3	1	0	0	0	5	2.9%	9.9
SE	0	0	2	14	3	0	0	0	19	11.1%	11.0
SSE	0	0	3	2	4	1	0	0	10	5.8%	12.7
S	0	0	6	20	0	0	0	0	26	15.2%	9.0
SSW	0	0	3	6	8	0	0	0	17	9.9%	11.1
SW	0	0	0	0	2	0	0	0	2	1.2%	14.8
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	0	0	0	0	0	1	0.6%	5.9
WNW	0	0	0	3	0	0	0	0	3	1.8%	8.2
NW	0	0	5	2	0	0	0	0	7	4.1%	7.5
NNW	0	0	6	21	10	0	0	0	37	21.6%	10.3
Total	0	0	37	90	43	1	0	0	171		
% Of Total	0.0%	0.0%	21.6%	52.6%	25.1%	0.6%	0.0%	0.0%			

Average speed for this table (MPH): 10.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

**Joint Frequency Table - Batch Release Hours**

**From : 10/01/2002 00:00 To : 12/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS B**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	0	4	3	0	0	0	7	10.4%	11.5
NNE	0	0	1	5	2	0	0	0	8	11.9%	10.6
NE	0	0	3	2	1	0	0	0	6	9.0%	8.3
ENE	0	0	1	2	1	0	0	0	4	6.0%	9.4
E	0	0	2	0	0	0	0	0	2	3.0%	4.7
ESE	0	0	1	3	1	0	0	0	5	7.5%	9.9
SE	0	0	1	4	1	0	0	0	6	9.0%	9.6
SSE	0	1	2	2	1	0	0	0	6	9.0%	8.3
S	0	0	3	3	1	0	0	0	7	10.4%	8.8
SSW	0	0	2	1	0	0	0	0	3	4.5%	6.9
SW	0	0	0	0	1	0	0	0	1	1.5%	13.2
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	0	0	0	0	0	1	1.5%	5.2
WNW	0	0	2	1	0	0	0	0	3	4.5%	7.3
NW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NNW	0	0	2	5	1	0	0	0	8	11.9%	9.6
Total	0	1	21	32	13	0	0	0	67		
% Of Total	0.0%	1.5%	31.3%	47.8%	19.4%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554



**Joint Frequency Table - Batch Release Hours**

**From : 10/01/2002 00:00 To : 12/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS C**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	0	6	4	1	0	0	0	11	18.0%	8.7
NNE	0	0	2	0	1	0	0	0	3	4.9%	8.7
NE	0	0	2	2	2	0	0	0	6	9.8%	10.1
ENE	0	0	5	3	1	0	0	0	9	14.8%	8.1
E	0	1	3	2	0	0	0	0	6	9.8%	6.6
ESE	0	0	1	1	0	0	0	0	2	3.3%	8.2
SE	0	1	0	2	0	0	0	0	3	4.9%	7.7
SSE	0	0	4	2	0	0	0	0	6	9.8%	7.3
S	0	0	4	3	0	0	0	0	7	11.5%	7.3
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	1	2	0	0	0	0	3	4.9%	9.4
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	0	0	0	0	0	0	0	0.0%	0.0
WNW	0	0	0	0	0	0	0	0	0	0.0%	0.0
NW	0	1	1	0	0	0	0	0	2	3.3%	5.0
NNW	0	0	2	1	0	0	0	0	3	4.9%	8.0
Total	0	3	31	22	5	0	0	0	61		
% Of Total	0.0%	4.9%	50.8%	36.1%	8.2%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 8.0  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

Joint Frequency Table - Batch Release Hours

From : 10/01/2002 00:00 To : 12/31/2002 23:00

PRIMARY TOWER

STABILITY CLASS D

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
Sector											
N	0	2	22	57	22	0	0	0	103	21.1%	9.8
NNE	0	2	17	46	8	0	0	0	73	15.0%	9.0
NE	0	1	7	41	14	0	0	0	63	12.9%	10.4
ENE	0	0	12	21	9	0	0	0	42	8.6%	10.0
E	0	1	6	8	2	0	0	0	17	3.5%	8.6
ESE	0	0	5	3	1	0	0	0	9	1.8%	7.9
SE	0	0	6	7	0	0	0	0	13	2.7%	8.1
SSE	0	1	4	6	4	0	0	0	15	3.1%	9.2
S	0	2	8	7	1	0	0	0	18	3.7%	7.4
SSW	0	2	6	10	0	0	0	0	18	3.7%	7.7
SW	0	1	0	2	1	0	0	0	4	0.8%	9.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	0	1	1	0	0	0	0	2	0.4%	7.8
WNW	0	1	4	0	0	0	0	0	5	1.0%	5.6
NW	0	3	7	10	0	0	0	0	20	4.1%	7.0
NNW	0	4	22	26	33	0	0	0	85	17.5%	10.3
Total	0	20	127	245	95	0	0	0	487		
% Of Total	0.0%	4.1%	26.1%	50.3%	19.5%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 9.4  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

**Joint Frequency Table - Batch Release Hours**

**From : 10/01/2002 00:00 To : 12/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS E**

Wind Speed (MPH) ->	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
Sector											
N	0	1	11	23	3	1	0	0	39	11.2%	9.0
NNE	0	3	13	22	0	0	0	0	38	10.9%	7.9
NE	0	2	28	6	1	0	0	0	37	10.6%	6.4
ENE	0	1	19	7	0	0	0	0	27	7.8%	6.3
E	0	1	12	6	0	0	0	0	19	5.5%	6.8
ESE	0	2	17	4	0	0	0	0	23	6.6%	5.8
SE	0	2	13	1	0	0	0	0	16	4.6%	5.6
SSE	0	2	13	12	11	0	0	0	38	10.9%	8.9
S	0	3	8	3	0	0	0	0	14	4.0%	5.5
SSW	0	0	6	21	0	0	0	0	27	7.8%	8.0
SW	0	1	8	5	0	0	0	0	14	4.0%	6.4
WSW	0	0	1	0	1	0	0	0	2	0.6%	9.6
W	0	1	2	0	0	0	0	0	3	0.9%	4.4
WNW	0	2	4	2	0	0	0	0	8	2.3%	5.0
NW	0	2	3	1	0	0	0	0	6	1.7%	4.8
NNW	0	2	24	11	0	0	0	0	37	10.6%	6.8
Total	0	25	182	124	16	1	0	0	348		
% Of Total	0.0%	7.2%	52.3%	35.6%	4.6%	0.3%	0.0%	0.0%			

Average speed for this table (MPH): 7.1  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

**Joint Frequency Table - Batch Release Hours**

**From : 10/01/2002 00:00 To : 12/31/2002 23:00**

**PRIMARY TOWER**

**STABILITY CLASS F**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 -3.5	(3) 3.6 -7.5	(4) 7.6 -12.5	(5) 12.6 -18.5	(6) 18.6 -24.5	(7) 24.6 -32.5	(8) 32.6+	Total	% Of Total	Avg. Speed
N	0	2	12	3	0	0	0	0	17	8.5%	6.0
NNE	0	4	18	1	0	0	0	0	23	11.6%	5.0
NE	0	3	15	0	0	0	0	0	18	9.0%	4.6
ENE	0	4	9	0	0	0	0	0	13	6.5%	4.5
E	0	7	13	0	0	0	0	0	20	10.1%	4.5
ESE	0	5	19	0	0	0	0	0	24	12.1%	4.8
SE	0	2	17	1	0	0	0	0	20	10.1%	4.7
SSE	0	1	8	0	0	0	0	0	9	4.5%	4.3
S	0	3	7	0	0	0	0	0	10	5.0%	5.0
SSW	0	0	2	0	0	0	0	0	2	1.0%	4.8
SW	0	1	1	0	0	0	0	0	2	1.0%	4.5
WSW	0	1	0	0	0	0	0	0	1	0.5%	3.0
W	0	1	0	0	0	0	0	0	1	0.5%	2.4
WNW	0	5	1	0	0	0	0	0	6	3.0%	2.6
NW	0	5	7	1	0	0	0	0	13	6.5%	4.3
NNW	0	1	17	2	0	0	0	0	20	10.1%	5.7
Total	0	45	146	8	0	0	0	0	199		
% Of Total	0.0%	22.6%	73.4%	4.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.8  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554

**Joint Frequency Table - Batch Release Hours**

**From** : 10/01/2002 00:00 **To** : 12/31/2002 23:00

**PRIMARY TOWER**

**STABILITY CLASS G**

Wind Speed (MPH) -> Sector	(1) CALM	(2) 1.0 - 3.5	(3) 3.6 - 7.5	(4) 7.6 - 12.5	(5) 12.6 - 18.5	(6) 18.6 - 24.5	(7) 24.6 - 32.5	(8) 32.6 +	Total	% Of Total	Avg. Speed
N	0	3	11	0	0	0	0	0	14	6.3%	4.8
NNE	1	7	19	0	0	0	0	0	27	12.2%	4.0
NE	0	5	12	0	0	0	0	0	17	7.7%	3.9
ENE	0	10	25	0	0	0	0	0	35	15.8%	3.9
E	0	4	14	0	0	0	0	0	18	8.1%	4.3
ESE	0	3	12	0	0	0	0	0	15	6.8%	4.3
SE	0	3	8	0	0	0	0	0	11	5.0%	3.6
SSE	0	0	11	0	0	0	0	0	11	5.0%	5.8
S	0	1	0	0	0	0	0	0	1	0.5%	1.8
SSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
SW	0	0	0	0	0	0	0	0	0	0.0%	0.0
WSW	0	0	0	0	0	0	0	0	0	0.0%	0.0
W	0	4	11	0	0	0	0	0	15	6.8%	3.8
WNW	0	6	9	0	0	0	0	0	15	6.8%	3.7
NW	0	5	9	0	0	0	0	0	14	6.3%	3.9
NNW	0	10	18	0	0	0	0	0	28	12.7%	4.4
Total	1	61	159	0	0	0	0	0	221		
% Of Total	0.5%	27.6%	71.9%	0.0%	0.0%	0.0%	0.0%	0.0%			

Average speed for this table (MPH): 4.2  
 Hours in above table with variable direction : 0  
 Total number of CALMs : 1  
 Total number of Invalid hours : 0  
 Total number of Valid hours : 1554  
 Total number of hours for period : 1554



RADIOACTIVE EFFLUENT RELEASE

2002