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April 28, 2006

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

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NOS. 50-445 AND 50-446  
TRANSMITTAL OF YEAR 2005 RADIOACTIVE EFFLUENT  
RELEASE REPORT**

Gentlemen:

In accordance with Section 5.6.3 of the CPSES Unit 1 and 2 Technical Specifications (Appendix A to License Nos. NPF-87 and NPF-89) and Section 6.9.1.4 of the CPSES Offsite Dose Calculation Manual (ODCM), enclosed is the Radioactive Effluent Release Report which covers the reporting period from January 1, 2005 through December 31, 2005.

The tabular summaries of radioactive liquid and gaseous releases are provided in the format defined in Appendix B of Regulatory Guide 1.21, Rev. 1, dated June, 1974.

During this reporting period there were no changes to the CPSES ODCM.

If there are any questions regarding this report, contact Bob Kidwell at (254) 897-5310 or Scott Bradley at (254) 897-5495.

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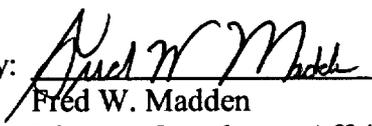
This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

Sincerely,

TXU Generation Company LP

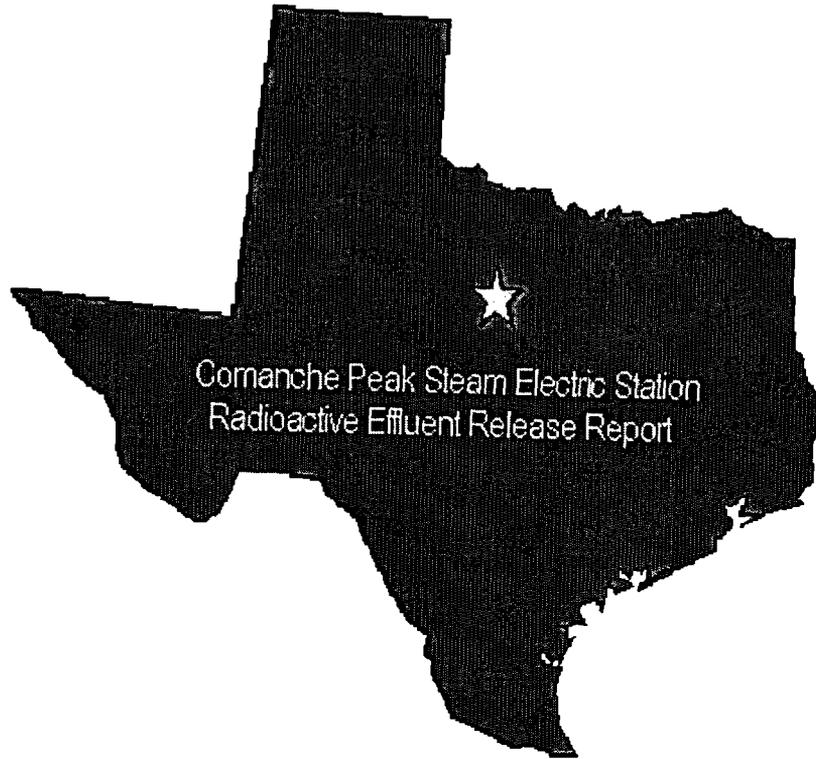
By: TXU Generation Management Company LLC  
Its General Partner

Mike Blevins

By:   
Fred W. Madden  
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Enclosure

c - B. S. Mallett, Region IV w/encl  
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Resident Inspectors, CPSES (clo)



# 2005 Report

COMANCHE PEAK STEAM ELECTRIC STATION

UNITS 1 AND 2

RADIOACTIVE EFFLUENT  
RELEASE REPORT

January 1, 2005 - December 31, 2005

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## ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CPSES	Comanche Peak Steam Electric Station
ECL	Effluent Concentration Limit
LHMT	Laundry Holdup and Monitor Tanks
LVW	Low Volume Waste
ODCM	Offsite Dose Calculation Manual
PET	Primary Effluent Tanks
REC	Radiological Effluent Control
SORC	Station Operations Review Committee
WMT	Waste Monitor Tanks
WWHT	Waste Water Holdup Tanks

## 1.0 INTRODUCTION

This Radioactive Effluent Release Report, for Comanche Peak Steam Electric Station Unit 1 and Unit 2, is submitted as required by Technical Specification 5.6.3 and Offsite Dose Calculation Manual (ODCM) Administrative Control 6.9.1.4 for the period January 1, 2005, through December 31, 2005.

### 1.1 Executive Summary

The radioactive effluent monitoring program for the year 2005 was conducted as described in the following report. The results of the monitoring program indicate the continued effort to maintain the release of radioactive effluents to the environment as low as reasonably achievable (ALARA).

A summation of all the radioactive gaseous releases to the environment during 2005 produced the following results:

- The total gaseous tritium activity released from the site for 2005 was 38.3 Curies which is a decrease from the 40.5 Curies in 2004. The major contributor to gaseous tritium activity is evaporation from the spent fuel pools. Factors contributing to the tritium activity in the pools is related to the type of fuel used (i.e., 18-month fuel) the core life and power output and number of core cycles.
- The total gaseous fission and activation activity (Noble gas) released from the site in 2005 was 845.0 Curies. This is an increase from the 5.62 Curies released in 2004. This increase was due to leaking fuel elements from Unit 1 reactor.
- The total gaseous particulate activity released for 2005 was 1.20e-06 Curies, due to leaking fuel elements from Unit 1 reactor.
- The gross alpha released has continued at 0.00 Curies for 2005 matching the performance of the previous nine years.
- Iodine was released at a value of 2.48e-04 Curies for 2005 due to the leaking fuel elements from Unit 1 reactor.
- The calculated gamma air dose from the site due to noble gases released during 2005 is 4.09e-02 mrad. This is an increase from 2004 which calculated out as 4.10e-03 mrad; the 2005 value represents only 0.205% of the annual limit for each reactor unit.
- The calculated beta air dose from the site due to noble gases released during 2005 is 1.02e-01 mrad which is an increase from 2004 which calculated out as 1.63e-03 mrad; however, this represents only 0.255% of the annual limit for each reactor unit.

- The total whole body dose from the site due to gaseous radioactivity released based on I-131, I-133, H-3 (tritium), and particulate nuclides for 2005 calculated out to be 0.037 mrem. This value is a decrease from the 2004 whole body dose of 0.039 mrem.
- Overall the gaseous radioactivity releases from CPSES are well controlled and maintained ALARA. CPSES is well below all applicable limits for gaseous releases.
- A summation of all the radioactive liquid releases to the environment during 2005 produced the following results:
  - The total number of Curies of radioactive nuclides released from the site in liquid effluents in 2005 was 1480.02 Curies, up from 1080.02 Curies in 2004.
  - Of the total Curies released from the site, tritium accounted for 1480.0 Curies while all other nuclides released accounted for only 0.02 Curies. The total curies of tritium released is up from the 2004 total of 1080.0 Curies. Tritium production is dependent on fuel type, power production and core power history.
  - The total whole body dose from the site due to liquid effluents calculated out at 1.08E-01 mrem which is only 1.80% of the annual limit for each unit. Tritium accounts for >99% of the calculated total whole body dose with the Squaw Creek Reservoir (SCR) tritium concentration being the controlling factor. The SCR tritium concentration for 2005 averaged 13,300 pCi/l which is statistically consistent with 2004 which averaged 11,094 pCi/l.
  - The 2005 average SCR tritium concentration of 13,300 pCi/l is 44.33% of the reporting limit of 30,000 pCi/l.

The CPSES meteorological system achieved an 87.3% recoverable data rate for the joint frequency parameters required by Regulatory Guide 1.23 for wind speed, wind direction and delta temperature. All other parameters also achieved approximately 87.0% recoverable data rate for 2005. The program goal is > 90% recovery. See section 6.8 for further explanation.

There are no ODCM noncompliance related issues discussed in this annual report.

During 2005 there were no Technical Specification/ODCM effluent radiation monitors out of service for >30 days.

There were no revisions to the ODCM approved and/or implemented in 2005.

For 2005, the total volume of solid radwaste buried decreased to 19.3 cubic meters from 34.0 cubic meters last year and the total radioactivity buried decreased to 249 curies from 474 curies in 2004. The majority of the buried solid waste volume comes from dry active waste at 13.9 cubic meters. Also, spent resins and filters were responsible for >98% of all the total radioactivity buried.

Overall, the radioactive effluent monitoring program has been conducted in an appropriate manner to ensure the activity released and associated dose to the public has been maintained as low as reasonably achievable (ALARA).

Information pertaining to the following items is included in this report:

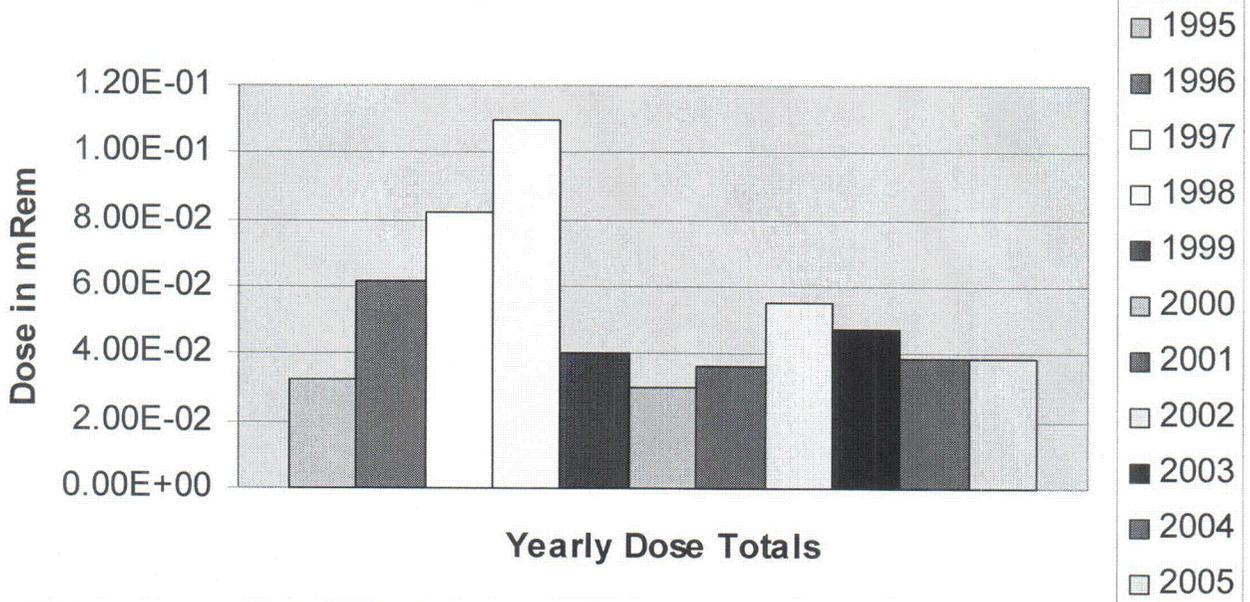
- A summary of the quantities of radioactive liquid and gaseous effluents released from CPSES during the reporting period in the format outlined in Appendix B of Regulatory Guide 1.21, Revision 1, June 1974.
- A summary of solid waste shipped from CPSES in the format shown in Appendix B of Regulatory Guide 1.21, Revision 1, June 1974, supplemented with three additional categories: class of waste (per 10CFR61), type of container (Strong Tight, HIC) and shipped and buried volumes and curies.
- An explanation of why inoperable liquid or gaseous effluent monitoring instrumentation was not corrected within 30 days.
- Changes to the ODCM in the form of a complete, legible copy of the entire ODCM.
- A listing of new locations for dose calculations and/or environmental monitoring identified by the Land Use Census.
- A description of the events leading to liquid holdup tanks or gas storage tanks exceeding Technical Specification limits.
- A list and description of abnormal releases of radioactive material from the site to unrestricted areas.
- A description of secondary resin releases to the LVW Pond.
- A description of major changes to radioactive waste treatment systems (liquid, gaseous and solid).
- An assessment of radiation doses due to the radioactive liquid and gaseous effluents released from CPSES Unit 1 and Unit 2 in 2005.

- An assessment of radiation doses to the likely, most exposed MEMBER OF THE PUBLIC from CPSES releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the reporting period, to show conformance with 40 CFR 190, "Environmental Radiation Protection Standards for Nuclear Power Operation."
- An assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the Site Boundary.

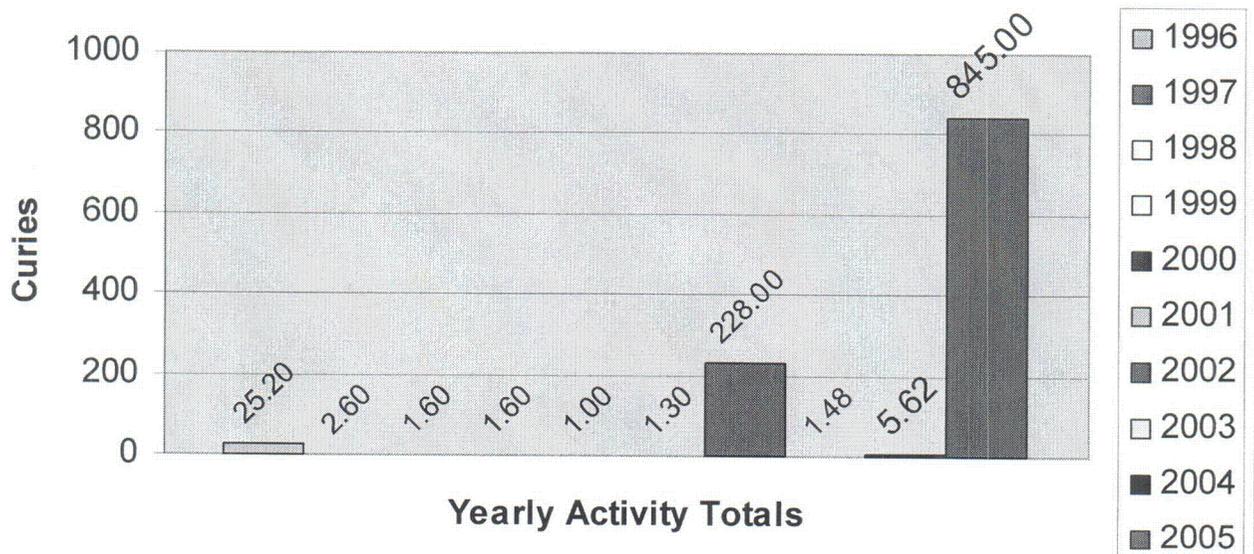
## 1.2 General Trend Graphs

- Total Whole Body Dose due to Gaseous Activity Released from CPSES
- Total Gaseous Fission and Activation Activity Released from CPSES
- Total Gaseous Tritium Activity Released from CPSES
- Total Whole Body Dose due to Liquid Effluents Released from CPSES
- Total Curies of Tritium Released in Liquid Effluents from CPSES
- Squaw Creek Reservoir Average Tritium Concentration

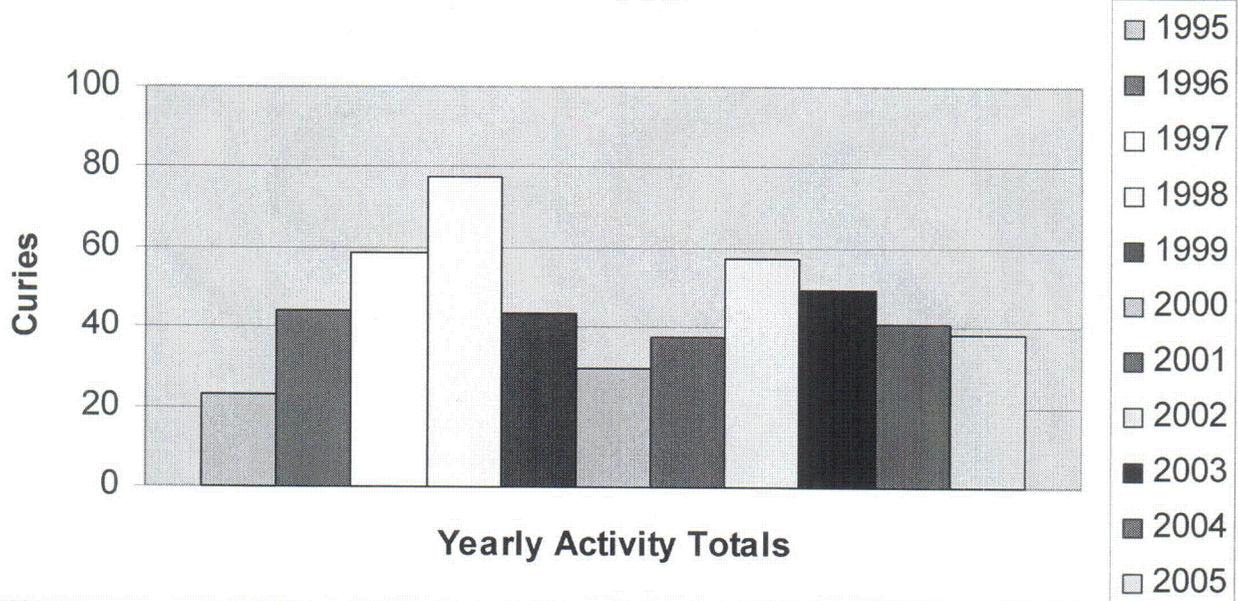
### Total Whole Body Dose due to Gaseous Activity Released from CPSES



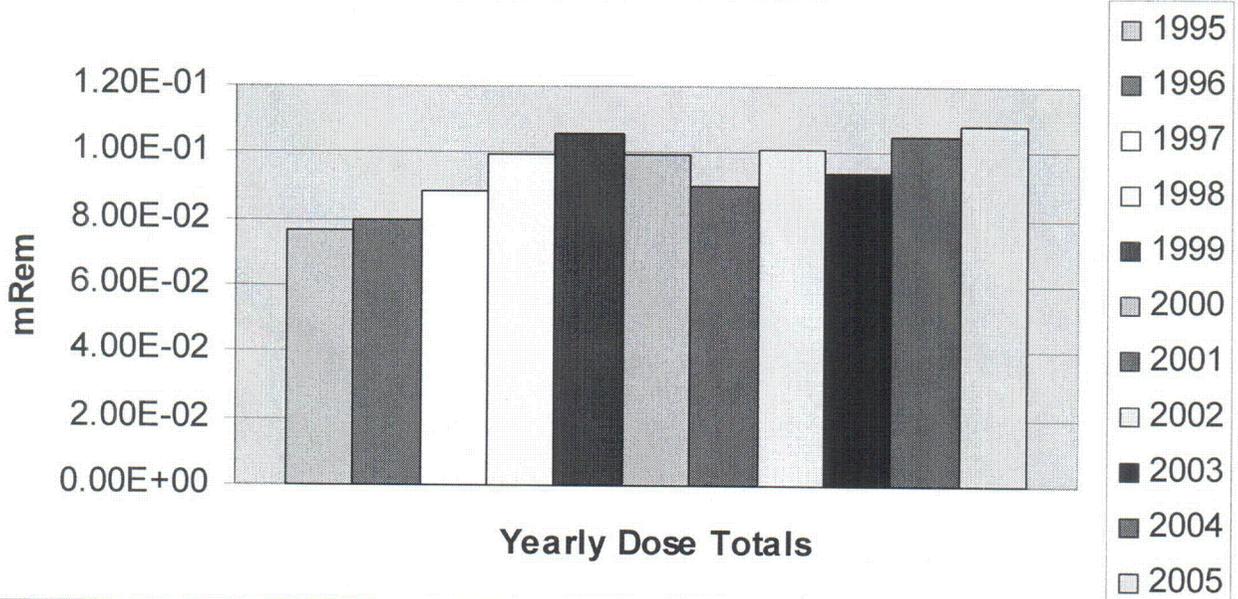
### Total Gaseous Fission and Activation Activity Released from CPSES



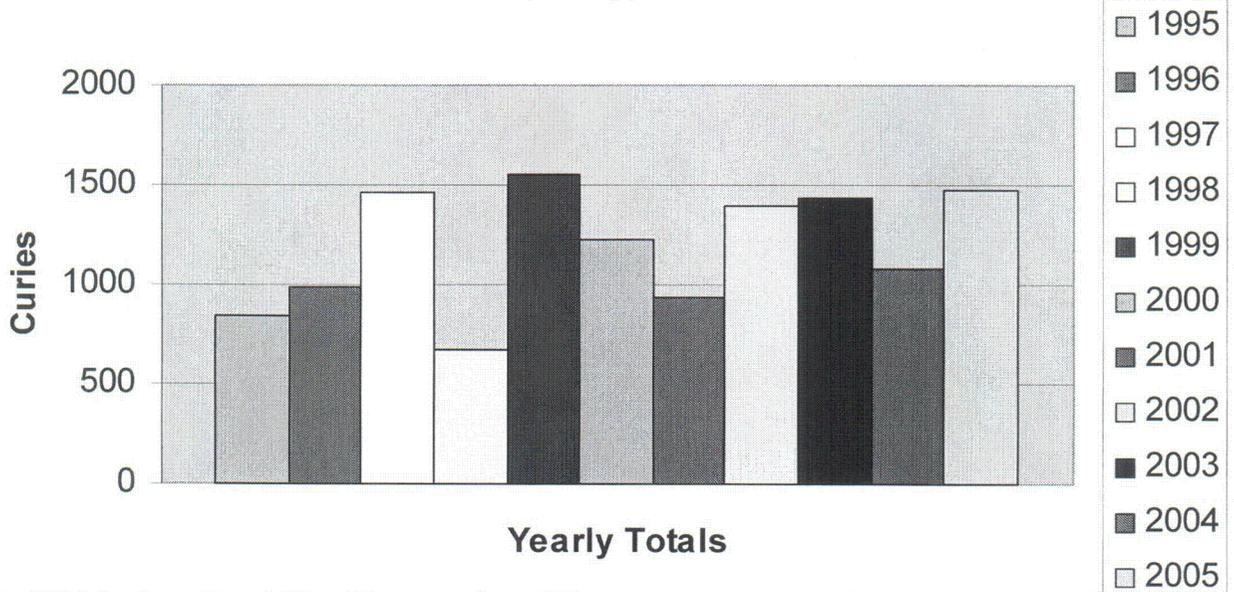
### Total Gaseous Tritium Activity Released from CPSES



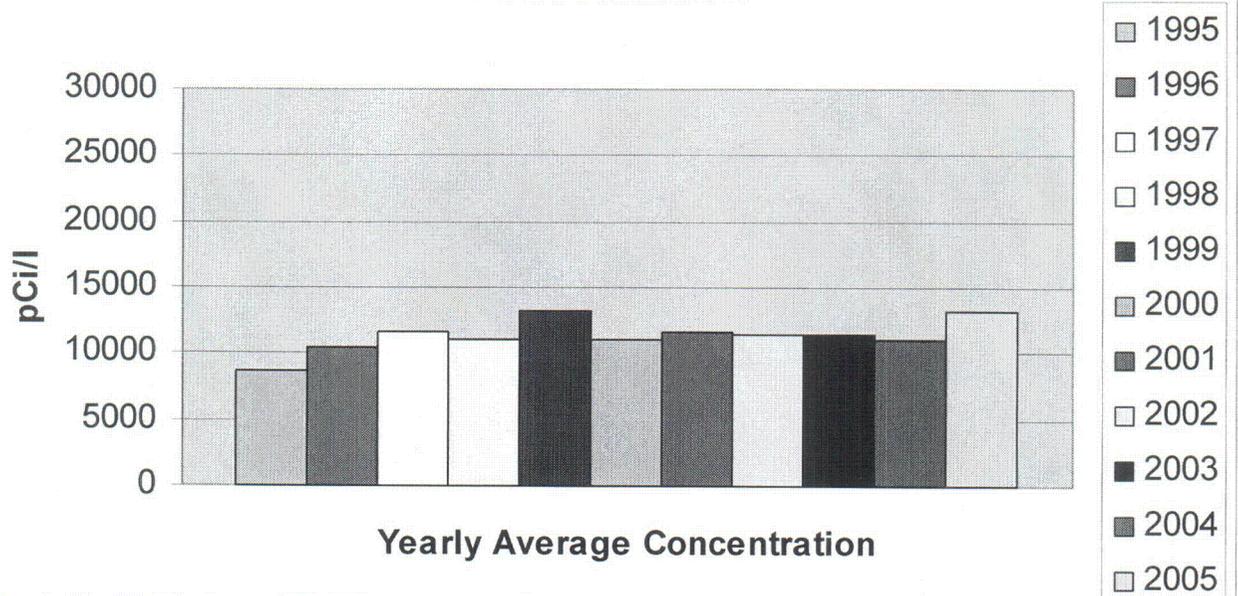
### Total Whole Body Dose Due to Liquid Effluents Released from CPSES



### Total Curies of Tritium Released in Liquid Effluents from CPSES



### Squaw Creek Reservoir Average Tritium Concentration



## 2.0 SUPPLEMENTAL INFORMATION

### 2.1 Regulatory Limits

The ODCM Radiological Effluent Control limits applicable to the release of radioactive material in liquid and gaseous effluents are described in the following sections.

#### 2.1.1 Fission and Activation Gases (Noble Gases)

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 less than or equal to 500 mrems/yr to the whole body and less than or equal to 3000 mrems/yr to the skin.

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:

- a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and
- b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

#### 2.1.2 Iodine-131, Iodine-133, Tritium and Radioactive Material in Particulate Form

The dose rate due to iodine-131, iodine-133, tritium and all radionuclides in particulate form with half lives greater than 8 days, released in gaseous effluents from the site to areas at and beyond the site boundary, shall be limited to less than or equal to 1500 mrem/yr to any organ.

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 8 days, in gaseous effluents released, from each unit, to areas at and beyond the site boundary, shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ, and
- b. During any calendar year: Less than or equal to 15 mrems to any organ.

2.1.3 Liquid Effluents

The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-4  $\mu\text{Ci/ml}$  total activity.

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:

- a. During any calendar quarter to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

2.1.4 LVW Pond Resin Inventory

The quantity of radioactive material contained in resins transferred to the LVW pond shall be limited by the following expression:

$$(264/V) \sum_j A_j/C_j < 1.0$$

excluding tritium, dissolved or entrained noble gases and radionuclides with less than an 8 day half life, where:

- $A_j$  = pond inventory limit for a single radionuclide  $j$  (Curies),
- $C_j$  = 10CFR20, Appendix B, Table 2 Column 2, concentration for a single radionuclide  $j$  ( $\mu\text{Ci/ml}$ ),
- $V$  = volume of resins in the pond (gallons), and
- 264 = conversion factor ( $\mu\text{Ci/Ci per ml/gal}$ )

### 2.1.5 Total Dose

The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the whole body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

## 2.2 Effluent Concentration Limits

### 2.2.1 Gaseous Effluents

For gaseous effluents, effluent concentration limits (ECL) values are not directly used in release rate calculations since the applicable limits are expressed in terms of dose rate at the site boundary.

### 2.2.2 Liquid Effluents

The values specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 are used as the ECL for liquid radioactive effluents released to unrestricted areas. A value of 2.0E-04  $\mu\text{Ci/ml}$  is used as the ECL for dissolved and entrained noble gases in liquid effluents.

## 2.3 Measurements and Approximations of Total Radioactivity

Measurements of total radioactivity in liquid and gaseous radioactive effluents were accomplished in accordance with the sampling and analysis requirements of Tables 4.11-1 and 4.11-2, respectively, of the CPSES ODCM.

### 2.3.1 Liquid Radioactive Effluents

Each batch release was sampled and analyzed for gamma emitting radionuclides using gamma spectroscopy, prior to release. Composite samples were analyzed monthly and quarterly for the Primary Effluent Tanks (PET), Waste Monitor Tanks (WMT), Laundry Holdup and Monitor Tanks (LHMT) and Waste Water Holdup Tanks (WWHT). Composite samples were analyzed monthly for tritium and gross alpha radioactivity in the onsite laboratory using liquid scintillation and gas flow proportional counting techniques, respectively. Composite samples were analyzed quarterly for Sr-89, Sr-90 and Fe-55 by a contract laboratory. The results of the composite analyses from the previous month or quarter were used to estimate the quantities of these radionuclides in liquid effluents during the current month or quarter. The total radioactivity in liquid

effluent releases was determined from the measured and estimated concentrations of each radionuclide present and the total volume of the effluent released during periods of discharge.

For batch releases of powdex resin to the LVW pond, samples were analyzed for gamma emitting radionuclides, using gamma spectroscopy techniques, prior to release. Composite samples were analyzed quarterly, for Sr-89 and Sr-90, by a contract laboratory.

For continuous releases to the Circulating Water Discharge from the LVW pond, daily grab samples were obtained over the period of pond discharge. These samples were composited and analyzed for gamma emitting radionuclides, using gamma spectroscopy techniques. Composite samples were also analyzed for tritium and gross alpha radioactivity using liquid scintillation and gas flow proportional counting techniques, respectively. Composite samples were analyzed quarterly for Sr-89, Sr-90 and Fe-55 by a contract laboratory.

#### 2.3.2 Gaseous Radioactive Effluents

Each gaseous batch release was sampled and analyzed for radioactivity prior to release. For releases from Waste Gas Decay Tanks, noble gas grab samples were analyzed for gamma emitting radionuclides using gamma spectroscopy. For releases from the Containment Building, samples were taken using charcoal and particulate filters, in addition to noble gas and tritium grab samples, and analyzed for gamma emitting radionuclides prior to each release with the exception of Containment vents made as a precursor to a Containment purge. In these cases, samples collected and analyzed as a prerequisite to the vent were used to estimate total radioactivity released during the subsequent purge. The results of the analyses and the total volume of effluent released were used to determine the total amount of radioactivity released in the batch mode.

For continuous effluent release pathways, noble gas and tritium grab samples were collected and analyzed weekly for gamma emitting radionuclides by gamma spectroscopy and liquid scintillation counting techniques, respectively. Continuous release pathways were continuously sampled using radioiodine adsorbers and particulate filters. The radioiodine adsorbers and particulate filters were analyzed weekly for I-131 and gamma emitting radionuclides using gamma spectroscopy. Results of the noble gas and tritium grab samples, radioiodine adsorber and

particulate filter analyses from the current week and the average effluent flow rate for the previous week were used to determine the total amount of radioactivity released in the continuous mode. Monthly composites of particulate filters were analyzed for gross alpha activity, in the onsite laboratory using the gas flow proportional counting technique. Quarterly composites of particulate filters were analyzed for Sr-89 and Sr-90 by a contract laboratory.

#### 2.4 Batch Releases

A summary of information for gaseous and liquid batch releases is included in Table 7.1.

#### 2.5 Abnormal or Unplanned Releases

Abnormal releases are defined as the unintended discharge of a volume of liquid or airborne radioactivity to the environment.

No abnormal effluent releases occurred during the period covered by this report.

### 3.0 GASEOUS EFFLUENTS

The quantities of radioactive material released in gaseous effluents are summarized in Tables 7.3 and 7.4. All releases of radioactive material in gaseous form are considered to be ground level releases.

### 4.0 LIQUID EFFLUENTS

The quantities of radioactive material released in liquid effluents are summarized in Tables 7.5 and 7.6.

### 5.0 SOLID WASTES

The quantities of radioactive material released as solid effluents are summarized in Table 7.13.

## 6.0 RELATED INFORMATION

### 6.1 Operability of Liquid and Gaseous Monitoring Instrumentation

ODCM Radiological Effluent Controls 3.3.3.4 and 3.3.3.5 require an explanation of why designated inoperable liquid and gaseous monitoring instrumentation was not restored to operable status within thirty days.

During the period covered by this report, there were no instances where these instruments were inoperable for more than thirty days.

### 6.2 Changes to the Offsite Dose Calculation Manual

During the period covered by this report, there were no revisions to the ODCM approved and/or implemented. A complete copy of the ODCM is not required to be submitted with this report.

### 6.3 New Locations for Dose Calculations or Environmental Monitoring

ODCM Administrative Control 6.9.1.4 requires any new locations for dose calculations and/or environmental monitoring, identified by the Land Use Census, to be included in the Radioactive Effluent Release Report. Based on the 2005 Land Use Census, no new receptor locations were identified which resulted in changes requiring a revision in current environmental sample locations. Values for the current nearest resident, milk animal, garden, X/Q and D/Q values in all sectors surrounding CPSES were included in the 2005 Land Use Census.

### 6.4 Liquid Holdup and Gas Storage Tanks

ODCM Administrative Control 6.9.1.4 requires a description of the events leading to liquid holdup or gas storage tanks exceeding the limits required to be established by Technical Specification 5.5.12. Technical Requirements Manual 13.10.33 limits the quantity of radioactive material contained in each unprotected outdoor tank to less than or equal to ten curies, excluding tritium and dissolved or entrained noble gases. Technical Requirements Manual 13.10.32 limits the quantity of radioactive material contained in each gas storage tank to less than or equal to 200,000 curies of noble gases (considered as Xe-133 equivalent). These limits were not exceeded during the period covered by this report.

## 6.5 Noncompliance with Radiological Effluent Control Requirements

This section provides a listing and description of Abnormal Releases, issues that did not comply with the applicable requirements of the Radiological Effluents Controls given in Part I of the CPSES ODCM and/or issues that did not comply with associated Administrative Controls and that failed to meet CPSES expectations regarding Station Radioactive Effluent Controls. Detailed documentation concerning evaluations of these events and corrective actions is maintained onsite.

### 6.5.1 Abnormal or Unplanned Gaseous and Liquid Releases

There were no abnormal or unplanned gaseous or liquid releases during this reporting period.

### 6.5.2 ODCM Expectations and Controls

During the time period of this report there were no issues regarding the failure to meet the requirements of the Radiological Effluent Controls either from the ODCM or CPSES programs and procedures.

## 6.6 Resin Releases to the LVW Pond

A total of 486 ft<sup>3</sup> of powdex resin was transferred to the LVW pond during the period covered by this report. The cumulative activity deposited in the LVW pond since operations began through the end of 2005 totals 6.68E-04 Curies, consisting of Co-58, Co-60, Cs-134, Cs-137 and Sb-125.

## 6.7 Changes to the Liquid, Gaseous, and Solid Waste Treatment Systems

In accordance with the CPSES Process Control Program, Section 6.2.6.2, changes to the Radwaste Treatment Systems (liquid, gaseous and solid) should be summarized and reported to the Commission in the Radioactive Effluent Release Report if the changes implemented required a 10CFR50.59 safety evaluation.

For the reporting period of this report, no changes to the Radwaste Treatment Systems occurred that meet the reporting criteria of the Process Control Program.

## 6.8 Meteorological Monitoring Program

In accordance with ODCM Administrative Control 6.9.1.4, a summary of hourly meteorological data, collected during 2005, is retained onsite. This data is available for review by the NRC upon request. Joint Frequency Tables are included in Attachment 8.1.

During 2005, the goal of >90% joint data recovery was not met. The meteorological computer failed on August 1, 2005. It remained undiscovered until September 7, 2005. The problem was traced to a printer problem. As an interim corrective action, a sign has been placed on the printer to warn people using the computer system to avoid the same print error. This compensatory measure has been effective in preventing a reoccurrence of the condition. Alternative meteorological data sources were available on site during this time frame. Historical and current meteorological data was available if it had been needed to meet emergency planning needs. The strip-chart recorders and the ERF computer systems both had data during this timeframe but the data can not be sent to the meteorological computer and is therefore not considered as being recoverable, resulting in an 87.3% joint data recovery rate.

Long term solutions to address the problem are being planned in the CPSES Corrective Action Program (SMF-2006-000489).

## 6.9 Assessment of Doses

### 6.9.1 Doses Due to Liquid Effluents

The doses to an adult from the fish and cow-meat consumption pathways from Squaw Creek Reservoir were calculated in accordance with the methodology and parameters in the ODCM. The results of the calculations are summarized on a quarterly and annual basis in Table 7.7.

### 6.9.2 Doses Due to Gaseous Effluents

The air dose due to gamma emissions and the air dose due to beta emissions were calculated using the highest annual average atmospheric dispersion factor at the Site Boundary location, in accordance with the methodology and parameters in the ODCM. The results of the calculations are summarized on a quarterly and annual basis in Table 7.8.

6.9.3 Dose Due to Radioiodines, Tritium and Particulates

The doses to an adult, teen, child, and infant from radioiodines and particulates, for the pathways listed in Part II, Table 2.4 of the ODCM, were calculated using the highest dispersion and deposition factors, as appropriate, in accordance with the methodology and parameters in the ODCM. The results of the calculations are summarized on a quarterly and annual basis in Tables 7.9 through 7.12.

6.9.4 40CFR190 Dose Evaluation

ODCM Radiological Effluent Control 3.11.4 requires dose evaluations to demonstrate compliance with 40 CFR Part 190 only if the calculated quarterly or yearly doses exceed two times the applicable quarterly or annual dose limits. At no time during 2005 were any of these limits exceeded, therefore no evaluations are required.

6.9.5 Doses to a MEMBER OF THE PUBLIC From Activities Inside the Site Boundary

Three activities are considered in this evaluation: fishing on Squaw Creek Reservoir, recreation activities at the CPSES employee recreational area and site tours through the CPSES Visitors Center.

The highest dose occurred in the evaluation for fishing, resulting in a dose of  $1.27E-4$  mrem/yr. The dose to a MEMBER OF THE PUBLIC (fisherman) on Squaw Creek Reservoir was calculated based on fishing twice a week, five hours each day, six months per year. Pathways included in the calculation were gaseous inhalation and submersion. Liquid pathways are not considered since all doses are calculated at the point of circwater discharge into the lake.

The dose to a MEMBER OF THE PUBLIC engaged in recreational activities at the CPSES employee recreational park was calculated based on one visit a week, five hours each day, six months per year. Pathways included in the calculation were gaseous inhalation, submersion and ground plane.

The dose to a MEMBER OF THE PUBLIC during site tours through the CPSES Visitors Center was calculated based on two visits per year, thirty minutes each visit. Pathways included in the calculation were gaseous inhalation and submersion.

Due to increased security, routine fishing on Squaw Creek Reservoir and visitation by the public on-site has been significantly restricted. The calculations are still valid and included in the event security access restrictions are ever returned to previous conditions and controls.

All calculations were performed in accordance with the methodology and parameters in the ODCM.

## **SECTION 7.0**

### **TABLES**

Table 7.1

BATCH LIQUID AND GASEOUS RELEASE SUMMARY - 2005

	<u>Quarter 1</u>	<u>Quarter 2</u>	<u>Quarter 3</u>	<u>Quarter 4</u>
<u>A. Liquid Releases All Sources</u>				
Number of Batch Releases	1.80E+01	1.00E+01	1.50E+01	1.00E+01
Total Time Period for Batch Releases (min)	5.43E+03	3.20E+03	4.88E+03	3.20E+03
Maximum Time Period for a Batch Release (min)	3.33E+02	3.45E+02	3.55E+02	3.52E+02
Average Time Period for a Batch Release (min)	3.02E+02	3.20E+02	3.25E+02	3.20E+02
Minimum Time Period for a Batch Release (min)	2.55E+02	2.96E+02	2.85E+02	2.80E+02
Average Stream Flow During Periods of Release (ft <sup>3</sup> /s)	N/A	N/A	N/A	N/A
 <u>B. Gaseous Releases All Sources</u>				
Number of Batch Releases	4.30E+01	3.30E+01	3.30E+01	3.50E+01
Total Time Period for Batch Releases (min)	1.60E+04	1.31E+04	1.23E+04	1.42E+04
Maximum Time Period for a Batch Release (min)	8.13E+02	9.90E+02	4.44E+02	1.44E+03
Average Time Period for a Batch Release (min)	3.71E+02	3.98E+02	3.73E+02	4.04E+02
Minimum Time Period for a Batch Release (min)	1.37E+02	2.98E+02	2.67E+02	1.79E+02

TABLE 7.2

ABNORMAL BATCH LIQUID AND GASEOUS RELEASE SUMMARY - 2005

	<u>Quarter 1</u>	<u>Quarter 2</u>	<u>Quarter 3</u>	<u>Quarter 4</u>
<b>A. <u>Liquids</u></b>				
Number of Releases	0	0	0	0
Total Activity Released, Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>B. <u>Gases</u></b>				
Number of Releases	0	0	0	0
Total Activity Released, Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE 7.3**  
**GASEOUS EFFLUENTS--SUMMATION OF ALL RELEASES - 2005**

Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est.Total Error, %
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**A. Fission and Activation Gases**

1. Total release (site)	ci	1.11E+01	4.08E+01	1.30E+02	6.63E+02	2.35E+01
2. Average release rate for period (site)	μCi/sec	1.42E+00	5.18E+00	1.64E+01	8.34E+01	
3. Percent of ODCM REC limit (Dose Rate 500 mrem/yr/site)	%	4.19E-04	1.25E-03	3.44E-03	2.49E-02	
4. Percent of ODCM REC limit (Skin Dose Rate 3000 mrem/yr/site)	%	1.86E-04	4.68E-04	1.30E-03	9.07E-03	

**B. Iodines**

1. Total Iodine-131 (site)	ci	0.00E+00	0.00E+00	0.00E+00	1.82E-04	1.43E+01
2. Average release rate for period (site)	μCi/sec	0.00E+00	0.00E+00	0.00E+00	2.29E-05	
3. Percent of ODCM REC limit (Organ Dose Rate 1500 mrem/yr/site)	%	0.00E+00	0.00E+00	0.00E+00	1.46E-02	

**C. Particulates**

1. Particulates with half lives > 8 days (site)	ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E+01
2. Average release rate for period (site)	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
3. Percent of ODCM REC limit (Organ Dose Rate 1500 mrem/yr/site)	%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
4. Gross alpha radioactivity (site)	ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

**D. Tritium**

1. Total release (site)	ci	7.60E+00	8.00E+00	7.11E+00	1.56E+01	2.38E+01
2. Average release rate for period (site)	μCi/sec	9.78E-01	1.02E+00	8.95E-01	1.96E+00	
3. Percent of ODCM REC limit (Organ Dose 7.5 mrem/qtr/unit)	%	4.87E-02	1.02E-01	9.01E-02	2.79E+00	

**TABLE 7.4**

GASEOUS EFFLUENTS--GROUND LEVEL RELEASES--2005

Continuous Mode

Nuclides Released from the site	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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**A. Fission and Activation Gases**

Xe-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-133	Ci	8.87E+00	3.29E+01	1.22E+02	2.32E+01
Xe-135	Ci	0.00E+00	8.68E-01	3.19E-01	0.00E+00
Total for period	Ci	8.87E+00	3.38E+01	1.22E+02	2.32E+01

**B. Iodines**

I-131	Ci	0.00E+00	0.00E+00	0.00E+00	1.82E-04
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	6.61E-05
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	2.48E-04

**C. Particulates-Half-life >= 8 Days**

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**D. Tritium**

H-3	Ci	7.52E+00	7.96E+00	7.08E+00	1.53E+01
Total for period	Ci	7.52E+00	7.96E+00	7.08E+00	1.53E+01

TABLE 7.4 (con't.)

GASEOUS EFFLUENTS--GROUND LEVEL RELEASES--2005

Batch Mode

Nuclides Released from the site	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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A. Fission and Activation Gases

Ar-41	Ci	2.26E-01	1.59E-01	1.69E-01	1.63E-01
Kr-85	Ci	0.00E+00	6.11E-01	8.15E-01	8.36E-01
Kr-85M	Ci	2.81E-02	0.00E+00	0.00E+00	1.10E+00
Kr-87	Ci	2.18E-02	0.00E+00	0.00E+00	0.00E+00
Kr-88	Ci	3.91E-02	0.00E+00	0.00E+00	0.00E+00
Xe-131M	Ci	1.02E-02	1.92E-01	1.63E-01	7.63E+00
Xe-133	Ci	1.36E+00	5.96E+00	6.18E+00	5.65E+02
Xe-133M	Ci	1.19E-03	2.64E-02	2.55E-02	1.15E+01
Xe-135	Ci	4.19E-01	2.70E-03	1.20E-03	5.37E+01
Xe-135M	Ci	9.72E-02	0.00E+00	0.00E+00	1.97E-03
Xe-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	2.20E+00	6.95E+00	7.35E+00	6.40E+02

B. Iodines

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

C. Particulates-Half-life >= 8 Days

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

D. Tritium

H-3	Ci	8.52E-02	4.17E-02	3.79E-02	4.27E-01
Total for period	Ci	8.52E-02	4.17E-02	3.79E-02	4.27E-01

**TABLE 7.5**  
**LIQUID EFFLUENTS--SUMMATION OF ALL RELEASES - 2005**

Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error, %
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**A. Fission and Activation Products**

1. Total release (not including tritium, gases, alpha) (site)	Ci	1.18E-02	4.89E-03	2.26E-03	2.71E-03	3.03E+01
2. Average diluted concentration during period (site)	µCi/ml	7.75E-10	4.42E-10	1.23E-10	2.26E-10	
3. Percent of ODCM REC limit ( $\Sigma$ diluted conc/10*ECL)	%	5.62E-04	3.14E-04	7.70E-05	2.40E-04	

**B. Tritium**

1. Total release (site)	Ci	6.80E+02	2.27E+02	3.05E+02	2.63E+02	1.34E+01
2. Average diluted concentration during period (site)	µCi/ml	4.46E-05	2.05E-05	1.67E-05	2.19E-05	
3. Percent of ODCM REC limit (diluted conc/1E-02 µCi/ml)	%	4.46E-01	2.05E-01	1.67E-01	2.19E-01	

**C. Dissolved and Entrained Gases**

1. Total release (site)	Ci	4.33E-01	1.63E-01	2.19E+00	4.50E-01	1.16E+01
2. Average diluted concentration during period (site)	µCi/ml	2.84E-08	1.47E-08	1.20E-07	3.75E-08	
3. Percent of ODCM REC limit (diluted conc/2.0E-04 µCi/ml)	%	1.42E-02	7.35E-03	6.00E-02	1.88E-02	

**D. Gross Alpha Radioactivity**

1. Total release (site)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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E. Volume of waste released (prior to dilution) (site)	Liters	1.24E+06	7.00E+05	1.09E+06	7.24E+05	2.20E+00
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F. Volume dilution of water used during period (Note 1)(site)	Liters	1.53E+10	1.11E+10	1.83E+10	1.20E+10	1.00E+01
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Note 1: The dilution volume reported is the total dilution volume during periods when effluent releases were occurring. The additional dilution volume available when there are no effluent releases occurring is not included.

**TABLE 7.6**

**LIQUID EFFLUENTS--2005**

**Continuous Mode**

Nuclides Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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**A. Fission and Activation Products**

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**B. Tritium**

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**C. Dissolved and Entrained Gases**

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**D. Gross Alpha Radioactivity**

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 7.6 (continued)

LIQUID EFFLUENTS--2005

Batch Mode

Nuclides Released	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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A. Fission and Activation Products

As-76	Ci	2.91E-05	0.00E+00	0.00E+00	3.75E-05
Co-57	Ci	2.63E-06	1.85E-05	0.00E+00	2.16E-05
Co-58	Ci	7.41E-05	3.95E-03	5.70E-04	1.36E-03
Co-60	Ci	1.09E-04	4.05E-04	1.86E-04	2.45E-04
Cr-51	Ci	2.07E-04	6.47E-05	0.00E+00	0.00E+00
Cs-137	Ci	0.00E+00	0.00E+00	0.00E+00	2.63E-06
Fe-55	Ci	1.79E-03	0.00E+00	0.00E+00	5.35E-05
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	9.84E-06
Mn-54	Ci	0.00E+00	1.67E-05	0.00E+00	7.50E-06
Nb-95	Ci	6.95E-07	0.00E+00	0.00E+00	1.32E-05
Sb-124	Ci	4.36E-03	0.00E+00	0.00E+00	0.00E+00
Sb-125	Ci	5.26E-03	4.35E-04	1.50E-03	9.66E-04
Sn-113	Ci	0.00E+00	0.00E+00	0.00E+00	1.54E-06
Sr-85	Ci	1.24E-06	0.00E+00	0.00E+00	0.00E+00
Y-88	Ci	0.00E+00	4.87E-06	0.00E+00	0.00E+00
Zr-95	Ci	0.00E+00	0.00E+00	2.25E-06	1.10E-05
none	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
none	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	Ci	1.18E-02	4.89E-03	2.26E-03	2.71E-03

B. Tritium

H-3	Ci	6.80E+02	2.27E+02	3.05E+02	2.63E+02
Total for period	Ci	6.80E+02	2.27E+02	3.05E+02	2.63E+02

C. Dissolved and Entrained Gases

Kr-85	Ci	2.70E-02	1.50E-03	4.97E-02	1.22E-02
Xe-131M	Ci	1.85E-02	5.87E-03	4.99E-02	1.03E-02
Xe-133	Ci	3.87E-01	1.55E-01	2.09E+00	4.19E-01
Xe-133M	Ci	4.99E-04	2.39E-04	8.20E-03	6.51E-03
Xe-135	Ci	4.36E-06	0.00E+00	1.20E-04	1.59E-03
Total for period	Ci	4.33E-01	1.63E-01	2.20E+00	4.50E-01

D. Gross Alpha Activity

None	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 7.7

DOSES FROM LIQUID EFFLUENTS -2005 (mrem) (site)

Any Organ 5 mrem/qtr/unit -- 10 mrem/yr/unit.  
 whole Body 1.5 mrem/qtr/unit -- 3 mrem/yr/unit.

Organ	Bone	Liver	whole Body	Thyroid	Kidney	Lung	GI-LLI
Quarter 1	9.69E-06	2.08E-02	2.08E-02	2.08E-02	2.08E-02	2.08E-02	2.08E-02
% Limit per unit	9.69E-05	2.08E-01	6.93E-01	2.08E-01	2.08E-01	2.08E-01	2.08E-01
Quarter 2	8.94E-08	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.57E-02
% Limit per unit	8.94E-07	2.56E-01	8.53E-01	2.56E-01	2.56E-01	2.56E-01	2.57E-01
Quarter 3	2.84E-07	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
% Limit per unit	2.84E-06	3.21E-01	1.07E+00	3.21E-01	3.21E-01	3.21E-01	3.21E-01
Quarter 4	4.84E-06	2.96E-02	2.96E-02	2.96E-02	2.96E-02	2.96E-02	2.97E-02
% Limit per unit	4.84E-05	2.96E-01	9.87E-01	2.96E-01	2.96E-01	2.96E-01	2.97E-01
Total 2005	1.38E-05	1.08E-01	1.08E-01	1.08E-01	1.08E-01	1.08E-01	1.08E-01
% Limit per unit	6.90E-05	5.40E-01	1.80E+00	5.40E-01	5.40E-01	5.40E-01	5.40E-01

Theoretical Maximum Age Group - Adult  
 Theoretical Highest Organ Dose - LUNG

**TABLE 7.8**

DOSES FROM GASEOUS EFFLUENTS -2005

Site Noble Gas Air Dose (mRad)

5 mrad gamma/qtr/unit -- 10 mrad beta/qtr/unit  
 10 mrad gamma/yr/unit -- 20 mrad beta/yr/unit

Air Dose (mRad)	Gamma Air	Beta Air
Quarter 1	7.96E-04	1.36E-03
% Limit per unit	7.96E-03	6.80E-03
Quarter 2	1.77E-03	4.70E-03
% Limit per unit	1.77E-02	2.35E-02
Quarter 3	4.98E-03	1.44E-02
% Limit per unit	4.98E-02	7.20E-02
Quarter 4	3.33E-02	8.15E-02
% Limit per unit	3.33E-01	4.08E-01
Total 2005	4.09E-02	1.02E-01
% Limit per unit	2.05E-01	2.55E-01

**TABLE 7.9**  
**DOSES FROM GASEOUS EFFLUENTS -2005**

Site Iodines, Particulates and Tritium Dose  
Adult Age Group, (mrem)  
Any Organ Dose Limit - 7.5 mrem/qtr/unit -- 15 mrem/yr/unit

Organ	Bone	Liver	whole Body	Thyroid	Kidney	Lung	GI-LLI	Skin
Qtr-1	0.00E+00	4.84E-03	4.84E-03	4.84E-03	4.84E-03	4.84E-03	4.84E-03	5.58E-03
% Limit per Unit	0.00E+00	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.72E-02
Qtr-2	0.00E+00	5.09E-03	5.09E-03	5.09E-03	5.09E-03	5.09E-03	5.09E-03	1.41E-02
% Limit per Unit	0.00E+00	3.39E-02	3.39E-02	3.39E-02	3.39E-02	3.39E-02	3.39E-02	9.40E-02
Qtr-3	0.00E+00	4.53E-03	4.53E-03	4.53E-03	4.53E-03	4.53E-03	4.53E-03	3.89E-02
% Limit per Unit	0.00E+00	3.02E-02	3.02E-02	3.02E-02	3.02E-02	3.02E-02	3.02E-02	2.59E-01
Qtr-4	7.56E-05	1.00E-02	9.97E-03	4.53E-02	1.01E-02	9.90E-03	9.93E-03	2.72E-01
% Limit per Unit	5.04E-04	6.67E-02	6.65E-02	3.02E-01	6.73E-02	6.60E-02	6.62E-02	1.81E+00
Total 2005	7.56E-05	2.45E-02	2.44E-02	5.97E-02	2.45E-02	2.44E-02	2.44E-02	3.31E-01
% Limit per Unit	2.52E-04	8.17E-02	8.13E-02	1.99E-01	8.17E-02	8.13E-02	8.13E-02	1.10E+00

TABLE 7.10

DOSES FROM GASEOUS EFFLUENTS -2005

Site Iodines, Particulates and Tritium Dose  
 Teen Age Group, (mrem)  
 Any Organ Dose Limit - 7.5 mrem/qtr/unit -- 15 mrem/yr/unit

Organ	Bone	Liver	Whole Body	Thyroid	Kidney	Lung	GI-LLI	Skin
Qtr-1	0.00E+00	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.58E-03
% Limit per Unit	0.00E+00	3.53E-02	3.53E-02	3.53E-02	3.53E-02	3.53E-02	3.53E-02	3.72E-02
Qtr-2	0.00E+00	5.58E-03	5.58E-03	5.58E-03	5.58E-03	5.58E-03	5.58E-03	1.41E-02
% Limit per Unit	0.00E+00	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	9.40E-02
Qtr-3	0.00E+00	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	3.89E-02
% Limit per Unit	0.00E+00	3.31E-02	3.31E-02	3.31E-02	3.31E-02	3.31E-02	3.31E-02	2.59E-01
Qtr-4	1.21E-04	1.10E-02	1.09E-02	6.04E-02	1.11E-02	1.08E-02	1.09E-02	2.72E-01
% Limit per Unit	8.07E-04	7.33E-02	7.27E-02	4.03E-01	7.40E-02	7.20E-02	7.27E-02	1.81E+00
Total 2005	1.21E-04	2.69E-02	2.68E-02	7.62E-02	2.70E-02	2.67E-02	2.67E-02	3.31E-01
% Limit per Unit	4.03E-04	8.97E-02	8.93E-02	2.54E-01	9.00E-02	8.90E-01	8.90E-01	1.10E+00

TABLE 7.11

DOSES FROM GASEOUS EFFLUENTS -2005

Site Iodines, Particulates and Tritium Dose  
 Child Age Group, (mrem)  
 Any Organ Dose Limit - 7.5 mrem/qtr/unit -- 15 mrem/yr/unit

Organ	Bone	Liver	Whole Body	Thyroid	Kidney	Lung	GI-LLI	Skin
Qtr-1	0.00E+00	7.30E-03	7.30E-03	7.30E-03	7.30E-03	7.30E-03	7.30E-03	5.58E-03
% Limit per Unit	0.00E+00	4.87E-02	4.87E-02	4.87E-02	4.87E-02	4.87E-02	4.87E-02	3.72E-02
Qtr-2	0.00E+00	7.68E-02	7.68E-02	7.68E-02	7.68E-02	7.68E-02	7.68E-02	1.41E-02
% Limit per Unit	0.00E+00	5.12E-02	5.12E-02	5.12E-02	5.12E-02	5.12E-02	5.12E-02	9.40E-02
Qtr-3	0.00E+00	6.83E-03	6.83E-03	6.83E-03	6.83E-03	6.83E-03	6.83E-03	3.89E-02
% Limit per Unit	0.00E+00	4.55E-02	4.55E-02	4.55E-02	4.55E-02	4.55E-02	4.55E-02	2.59E-01
Qtr-4	2.85E-04	1.52E-02	1.51E-02	1.09E-01	1.54E-02	1.49E-02	1.50E-02	2.72E-01
% Limit per Unit	1.90E-03	1.01E-01	1.01E-01	7.27E-01	1.03E-01	9.93E-02	1.00E-01	1.81E+00
Total 2005	2.85E-04	3.70E-02	3.69E-02	1.31E-01	3.72E-02	3.67E-02	3.68E-02	3.31E-01
% Limit per Unit	9.50E-04	1.23E-01	1.23E-01	4.37E-01	1.24E-01	1.22E-01	1.23E-01	1.10E+00

TABLE 7.12

DOSES FROM GASEOUS EFFLUENTS -2005

Site Iodines, Particulates and Tritium Dose  
 Infant Age Group, (mrem)  
 Any Organ Dose Limit - 7.5 mrem/qtr/unit -- 15 mrem/yr/unit

Organ	Bone	Liver	Whole Body	Thyroid	Kidney	Lung	GI-LLI	Skin
Qtr-1	0.00E+00	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	5.58E-03
% Limit per Unit	0.00E+00	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	3.72E-02
Qtr-2	0.00E+00	3.35E-03	3.35E-03	3.35E-03	3.35E-03	3.35E-03	3.35E-03	1.41E-02
% Limit per Unit	0.00E+00	2.23E-02	2.23E-02	2.23E-02	2.23E-02	2.23E-02	2.23E-02	9.40E-02
Qtr-3	0.00E+00	2.98E-03	2.98E-03	2.98E-03	2.98E-03	2.98E-03	2.98E-03	3.89E-02
% Limit per Unit	0.00E+00	1.99E-02	1.99E-02	1.99E-02	1.99E-02	1.99E-02	1.99E-02	2.59E-01
Qtr-4	5.27E-04	7.13E-03	6.78E-03	2.10E-01	7.24E-03	6.51E-03	6.53E-03	2.72E-01
% Limit per Unit	3.51E-03	4.75E-02	4.52E-02	1.40E+00	4.83E-02	4.34E-02	4.35E-02	1.81E+00
Total 2005	5.27E-04	1.66E-02	1.63E-02	2.19E-01	1.67E-02	1.60E-02	1.60E-02	3.31E-01
% Limit per Unit	1.76E-03	5.53E-02	5.43E-02	7.30E-01	5.57E-02	5.33E-02	5.33E-02	1.10E+00

**TABLE 7.13**  
**SOLID RADWASTE AND IRRADIATED FUEL SHIPMENTS -2005**

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

1. Type of Waste	Shipped m <sup>3</sup>	Shipped Ci	Buried m <sup>3</sup>	Buried Ci	Percent Error
a. Spent resins/filters	2.90E+01	1.99E+02	5.41E+00	2.47E+02	±25%
b. Dry active waste	3.77E+02	1.97E+00	1.39E+01	1.68E+00	±25%
c. Irradiated components	-0-	-0-	-0-	-0-	N/A
d. Other (oil/miscellaneous liquids sent to processor for reduction) volume	-0-	-0-	-0-	-0-	N/A
TOTAL	4.06E+02	2.01E+02	1.93E+01	2.49E+02	±25%

**Note:** Shipped volumes and curies are not always equal to the buried volumes and curies since some disposal occurs outside the twelve month time period in which shipments occurred.

Dry active waste also includes some low-level radioactive resins and filters that are handled and processed in a manner that is consistent with this waste stream.

2. Estimate of Major Nuclide Composition (by type of waste)	Nuclide	% Abund.	Activity (Ci)
a. Spent resins/filters	Fe-55	54.14	1.08E+02
	Ni-63	20.71	4.13E+01
	Co-60	17.65	3.52E+01
	Mn-54	3.71	7.39E+00
	Co-58	1.57	3.13E+00
	H-3	0.32	6.46E-01
	C-14	0.02	4.65E-02
	Tc-99	LLD	-0-
	I-129	LLD	-0-
	Others*	1.88	3.74E+00
	TOTAL	100.00	1.99E+02

\* Nuclides representing <1% of total shipped activity: Cr-51, Co-57, Fe-59, Ni-59, Zn-65, Sr-90, Nb-95, Zr-95, Sn-113, Sb-124, Sb-125, Cs-134, Cs-137, Ce-144, Hf-181, Pu-238, Pu-239/240, Pu-241, Am-241, Cm-242, Cm-243/244

TABLE 7.13 (Continued)

SOLID RADWASTE AND IRRADIATED FUEL SHIPMENTS -2005

2. Estimate of Major Nuclide Composition (by type of waste)	Nuclide	% Abund.	Activity (Ci)
b. Dry active waste	Fe-55	48.13	9.46E-01
	Ni-63	21.73	4.27E-01
	Co-60	16.24	3.19E-01
	Cs-137	4.11	8.08E-02
	Co-58	2.02	3.96E-02
	H-3	5.11	1.00E-01
	C-14	LLD	-0-
	Tc-99	LLD	-0-
	I-129	LLD	-0-
	Others*	2.66	5.24E-02
Total	100.00	1.97E+00	

\* Nuclides representing <1% of total shipped activity: Cr-51, Mn-54, Co-57, Fe-59, Sr-90, Nb-95, Zr-95, Sn-113, Sb-125, Cs-134, Ce-144, Pu-238, Pu-239/240, Pu-241, Am-241, Cm-242, Cm-243/244.

3. Solid Waste Disposition (Mode of Transportation: Truck)				
Waste Type	Waste Class	Container Type	Number of Shipments	Destination
a. Resin/filters	A	Poly *HIC	2	Studsvik Erwin, TN.
	B	Poly *HIC	1	Studsvik Erwin, TN.
	C	Poly *HIC	2	Studsvik Erwin, TN.
b. Dry active waste	A	General Design	7	GTS Duratek Oak Ridge, TN.

\* High Integrity Container  
 Note: One class A shipment that also included filters was shipped to Duratek and included in that total.

B. Irradiated Fuel Shipments (Disposition)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

**ATTACHMENT 8.1**

**Joint Frequency Tables for**

**2005**

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:A

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level							
Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	2	18	18	0	3	41
NNE	0	1	2	1	3	0	7
NE	4	12	8	2	0	0	26
ENE	2	12	3	1	0	0	18
E	3	5	5	0	0	0	13
ESE	0	18	29	0	0	0	47
SE	0	11	76	6	0	0	93
SSE	1	9	74	30	6	0	120
S	1	5	50	33	5	0	94
SSW	0	2	11	16	0	0	29
SW	0	3	5	1	0	0	9
WSW	2	3	1	0	0	0	6
W	0	1	0	0	0	0	1
WNW	0	0	1	1	0	0	2
NW	0	1	4	15	5	0	25
NNW	0	2	18	17	2	8	47
VARIABLE	3	2	0	0	0	0	5
TOTAL	16	89	305	141	21	11	583
Periods of calm (hours): 0							
Hours of missing data: 2							

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:B

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level

Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	10	15	9	4	3	44
NNE	1	7	6	1	2	1	18
NE	10	20	5	0	0	0	35
ENE	8	10	8	1	0	0	27
E	5	7	2	0	0	0	14
ESE	0	16	9	0	0	0	25
SE	0	14	22	4	1	0	41
SSE	1	9	31	30	4	0	75
S	0	10	37	47	5	0	99
SSW	0	10	16	14	2	0	42
SW	1	15	7	5	0	0	28
WSW	0	8	4	5	0	0	17
W	0	0	0	0	0	0	0
WNW	1	1	0	3	0	0	5
NW	0	4	6	5	4	0	19
NNW	0	19	26	14	7	5	71
VARIABLE	11	2	1	0	0	0	14
TOTAL	41	162	195	138	29	9	574

Periods of calm (hours): 0

Hours of missing data: 2

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:C

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level

Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	12	7	16	6	2	49
NNE	3	8	8	3	3	0	25
NE	8	15	5	5	1	0	34
ENE	11	14	12	1	0	0	38
E	2	5	3	0	0	0	10
ESE	1	20	4	0	0	0	25
SE	2	17	26	8	0	0	53
SSE	2	14	29	37	2	0	84
S	1	9	37	38	8	0	93
SSW	3	6	18	12	1	0	40
SW	1	12	10	11	0	0	34
WSW	3	4	9	10	0	0	26
W	0	4	4	0	1	0	9
WNW	0	1	2	5	4	0	12
NW	0	2	8	5	6	3	24
NNW	1	13	20	22	10	5	71
VARIABLE	17	2	1	0	0	0	20
TOTAL	61	158	203	173	42	10	647

Periods of calm (hours): 0

Hours of missing data: 1

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:D

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level

Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	8	88	146	135	16	0	393
NNE	12	60	78	31	6	2	189
NE	10	33	70	15	0	0	128
ENE	11	39	52	13	0	0	115
E	25	87	23	1	0	0	136
ESE	38	117	32	0	0	0	187
SE	26	144	192	25	1	0	388
SSE	15	73	307	228	18	1	642
S	5	54	213	172	4	0	448
SSW	7	41	37	23	1	0	109
SW	9	23	20	8	4	0	64
WSW	6	21	6	12	2	0	47
W	2	7	8	7	5	0	29
WNW	4	16	16	19	5	3	63
NW	4	22	38	36	15	5	120
NNW	7	31	73	170	46	5	332
VARIABLE	66	16	7	3	0	0	92
TOTAL	255	872	1318	898	123	16	3482

Periods of calm (hours): 6

Hours of missing data: 22

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:E

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level

Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	9	13	24	2	0	0	48
NNE	3	19	22	2	0	0	46
NE	3	4	1	1	0	0	9
ENE	1	6	2	0	0	0	9
E	8	23	5	0	0	0	36
ESE	26	85	7	0	0	0	118
SE	24	188	106	1	0	0	319
SSE	21	142	166	13	0	0	342
S	14	53	81	9	1	0	158
SSW	20	29	39	11	2	0	101
SW	19	28	21	9	5	0	82
WSW	10	12	8	1	0	0	31
W	10	4	14	0	0	0	28
WNW	13	21	17	1	0	0	52
NW	9	51	47	2	0	0	109
NNW	4	27	10	6	0	0	47
VARIABLE	63	6	1	0	0	0	70
TOTAL	257	711	571	58	8	0	1605

Periods of calm (hours): 6

Hours of missing data: 8

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:F

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level

Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	1	3	0	0	0	8
NNE	0	1	1	0	0	0	2
NE	2	0	0	0	0	0	2
ENE	0	1	1	0	0	0	2
E	0	0	1	0	0	0	1
ESE	3	3	2	1	0	0	9
SE	11	34	10	0	0	0	55
SSE	15	33	7	0	0	0	55
S	23	21	14	0	0	0	58
SSW	30	22	11	3	0	0	66
SW	23	29	12	0	0	0	64
WSW	15	15	5	0	0	0	35
W	17	6	5	0	0	0	28
WNW	14	8	5	0	0	0	27
NW	20	35	10	0	0	0	65
NNW	2	6	0	0	0	0	8
VARIABLE	27	1	0	0	0	0	28
TOTAL	206	216	87	4	0	0	513

Periods of calm (hours): 7

Hours of missing data: 0

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:G

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level							
Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	0	0	0	0	0	1
NNE	0	4	0	0	0	0	4
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	3	0	0	0	0	0	3
SE	4	8	0	0	0	0	12
SSE	7	2	0	0	0	0	9
S	11	7	1	0	0	0	19
SSW	16	4	2	0	0	0	22
SW	7	11	0	0	0	0	18
WSW	10	27	6	0	0	0	43
W	17	8	0	0	0	0	25
WNW	15	10	0	0	0	0	25
NW	17	31	1	0	0	0	49
NNW	9	3	0	0	0	0	12
VARIABLE	16	1	0	0	0	0	17
TOTAL	134	116	10	0	0	0	260
Periods of calm (hours): 1							
Hours of missing data: 0							

R. G. 1.21 JOINT FREQUENCY TABLE

TXU ELECTRIC COMPANY

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 01-JAN-05 00:00 TO 31-DEC-05 23:59

STABILITY CLASS:ALL

ELEVATION: 10 m.

Wind Speed (mph) at 10 m. level							
Wind Direction	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	31	126	213	180	26	8	584
NNE	19	100	117	38	14	3	291
NE	37	84	89	23	1	0	234
ENE	35	82	78	16	0	0	211
E	43	127	39	1	0	0	210
ESE	71	259	83	1	0	0	414
SE	68	416	432	44	2	0	962
SSE	63	282	614	338	30	1	1328
S	55	159	433	300	23	0	970
SSW	76	114	134	79	6	0	409
SW	60	121	75	34	9	0	299
WSW	46	91	39	28	2	0	206
W	47	30	31	7	6	0	121
WNW	47	57	41	29	9	3	186
NW	50	146	115	66	30	8	415
NNW	23	101	147	229	65	23	588
VARIABLE	203	31	10	3	0	0	247
TOTAL	974	2326	2690	1416	223	46	7675
Periods of calm (hours): 20							
Hours of missing data: 1065							