

PSEG NUCLEAR LLC

2002 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

FOR

THE SALEM AND HOPE CREEK

GENERATING STATIONS

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SALEM AND HOPE CREEK GENERATING STATIONS

RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY - DECEMBER 2002

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SALEM AND HOPE CREEK GENERATING STATIONS

RADIOACTIVE EFFLUENT RELEASE REPORT: JANUARY - DECEMBER 2002

INTRODUCTION

This report, SGS-RERR-51/HCGS-RERR-25 summarizes information pertaining to the releases of radioactive materials in liquid, gaseous and solid form from the Salem (SGS) and Hope Creek Generating (HCGS) Stations for the period January 1, 2002 to December 31, 2002.

Salem Unit 1 is a Westinghouse Pressurized Water Reactor that has a licensed core thermal power of 3459 MWt and an approximate net electrical output of 1133 MWe. Salem Unit 1 achieved initial criticality on December 11, 1976 and went into commercial operation on June 30, 1977.

Salem Unit 2 is a Westinghouse Pressurized Water Reactor that has a licensed core thermal power of 3459 MWt and an approximate net electrical output of 1134 MWe. Salem Unit 2 achieved initial criticality on August 2, 1980 and went into commercial operation on October 13, 1981.

The Hope Creek Generating Station (HCGS) is a General Electric (GE) Boiling Water Reactor designed to operate at a rated core thermal power of 3339 MWt and an approximate net electrical output of 1091 MWe. The HCGS achieved initial criticality on June 28, 1986 and went into commercial operation on December 20, 1986.

This report is prepared in the format of Regulatory Guide 1.21, Appendix B, as required by Control 6.9.1.8 of the Salem Units 1 and 2 Offsite Dose Calculation Manual (ODCM) and Control 6.9.1.7 of the Hope Creek ODCM. Our responses to parts A-F of the "Supplemental Information" section of Regulatory Guide 1.21, Appendix B, are included in the following pages.

As required by Regulatory Guide 1.21, the Offsite Dose Calculation Manual limits are described in detail within this report along with a summary description of how total radioactivity measurements and their approximations were developed.

To facilitate determination of compliance with 40CFR190 requirements, the following information on electrical output is provided.

Salem Unit 1 generated 8620568 megawatt-hours of electrical energy (net) during the reporting period.

Salem Unit 2 generated 8367434 megawatt-hours of electrical energy (net) during the reporting period.

Hope Creek generated 8843083 megawatt-hours of electrical energy (net) during the reporting period.

PART A. PRELIMINARY SUPPLEMENTAL INFORMATION

1.0 REGULATORY LIMITS

1.1 Fission and Activation Gas Release Limits

The dose rate due to radioactive materials released *in gaseous effluents* from the site (i.e. Salem Units 1 & 2, and Hope Creek) to areas at and beyond the site boundary, shall be limited to the following:

For noble gases: Less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin.

In addition, the air dose due to noble gases released *in gaseous effluents* from each reactor unit (i.e. Salem Unit 1, Unit 2, or Hope Creek) to areas at and beyond the site boundary, shall be limited to the following:

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,

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.

1.2 Iodine, Particulates, and Tritium

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 iodine-131, iodine-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

In addition, 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 reactor 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 mrem to any organ and,

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

1.3 Liquid Effluents Release Limits

The concentration of radioactive material released *in liquid effluents* to unrestricted areas shall be limited to the concentrations specified in 10CFR20, 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 2E-04 microcuries per milliliter.

In addition, the dose or dose commitment to a member of the public from radioactive materials *in liquid effluents* released to unrestricted areas shall be limited to:

During any calendar quarter: Less than or equal to 1.5 mrem to the total body, and less than or equal to 5 mrem to any organ, and

During any calendar year: Less than or equal to 3 mrem to the total body, and less than or equal to 10 mrem to any organ.

1.4 Total Dose Limit

The annual (calendar year) dose or dose commitment to any member of the public, due to releases of radioactivity and radiation, from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the total body or any organ (except the thyroid, which shall be limited to less than or equal to 75 mrem).

2.0 MAXIMUM PERMISSIBLE CONCENTRATIONS (MPC)

Regulatory Guide 1.21 requires that the licensee provide the MPC's used in determining allowable release rates or concentrations for radioactive releases.

- a. MPC values are not used for gaseous releases. Determination of maximum release rates for noble gases, I-133, tritium, and for all radionuclides in particulate form (with half-lives > 8 days), are based on dose rate calculations as specified in the ODCM.
- b. According to current Technical Specifications, MPC values as stated in 10CFR20, Appendix B, Table II, Column 2 are to be used for liquid effluents. Since the MPC values were removed from 10CFR20 effective 1/1/94, the MPC values are now contained in the ODCM. These MPC values are added as Appendix B of this report.
- c. The MPC value used for dissolved or entrained noble gases *in liquid effluents* is 2E-04 microcuries per milliliter.

3.0 AVERAGE ENERGY

Regulatory Guide 1.21 requires that the licensee provide the average energy of the radionuclide mixture in releases of fission and activation gases, if applicable. Release limits for SGS or HCGS are not based upon average energy. Therefore this section is not applicable to SGS or HCGS.

4.0 MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

4.1 Liquid Effluents

Liquid effluents are monitored in accordance with Table 4.11-1 of the Salem ODCM and Table 4.11.1.1.1-1 of the Hope Creek ODCM.

During the period of record, all batch liquid wastes were routed to the sampling tanks for monitoring prior to release. The ODCM requires these tanks to be uniformly mixed for sampling and analysis before being released.

Batch releases are defined as:

- For Hope Creek, releases from the Equipment Sample Tanks, Floor Drain Sample tanks, Detergent Drain Tanks, and the Condensate Storage Tank.
- For Salem, releases from the Service Water Drums which are collected and disposed via the Non-Radwaste Basin, Waste Monitor Holdup Tanks and the Chemical Volume Control System (CVCS) Monitor Tanks. During the period of record, all batch liquid wastes from the Chemical Drain Tank and Laundry and Hot Shower Tanks were routed to Waste Monitor Holdup Tanks for monitoring prior to release. For process flexibility of liquid effluents, the Salem Unit 1 and 2 Liquid Radwaste System is cross-connected.

Continuous releases are defined as:

- For Hope Creek, a continuous liquid effluent release path exists through the Circulating Water Dewatering Sump Discharge.
- For Salem, continuous liquid release pathways include condensate releases for intermittent blow-down of the Steam Generators, and through the Chemical Waste Basin.

Representative samples were obtained in accordance with Table 4.11-1 of the Salem ODCM for the Salem Generating Stations and Table 4.11.1.1.1-1 of the Hope Creek ODCM for Hope Creek Generating Station. Specific activities from the analyses were multiplied by the volume of effluent discharged to the environment in order to determine the total liquid activity discharged.

The detection requirements of Table 4.11-1 (SGS) and Table 4.11.1.1.1-1 (HCGS) of the ODCM are achieved. Radionuclides measured at concentrations below the ODCM detection limit (LLD) are treated as being

present. Radionuclides for which no activity was detected while meeting the required LLD's are treated as absent.

4.2 Gaseous Effluents

Salem Units 1 and 2:

Gaseous effluent streams at SGS are monitored and sampled in accordance with Table 4.11-2 of the ODCM. The Plant Vent is the final release point for planned gaseous effluent releases and is continuously monitored by installed radiation monitors. The vent is also continuously sampled for iodine and particulates with a charcoal cartridge and filter paper. The filter and charcoal are normally changed weekly, and analyzed on a multi-channel analyzer.

Sampling is also performed on all gas decay tanks and the containment atmosphere prior to release to the environment. The plant vent is normally sampled weekly for noble gases, particulates, iodines and tritium.

The detection requirements of Table 4.11-2 of the ODCM are achieved or exceeded. Radionuclides detected at concentrations below the ODCM LLD are treated as being present. Radionuclides for which no activity was detected while meeting the required LLDs are treated as absent.

Continuous Mode gaseous releases are quantified by routine sampling and isotopic analyses of the plant vent, as required by the ODCM. Specific activities for each isotope detected are multiplied by the total vent flow volume for the entire sampling period in order to determine the normal continuous release of radioactivity through the plant vent.

Batch Mode gaseous releases are quantified by sampling each decay tank or containment atmosphere prior to release. Specific activities for each isotope are multiplied by the total volume of gas discharged for that batch to determine the total activity released.

Elevated plant vent radiation monitoring system readings while the channel is in an alarm state are treated as batch mode releases. If specific activity data from grab samples are not available, then the release is quantified by the use of the plant vent radiation monitors. The monitor response is converted to "specific activity" using historical efficiency factors. The "specific activity" is multiplied by the volume of effluent discharged while the channel was in an alarm state in order to determine the total activity discharged.

Hope Creek:

Gaseous effluent streams at HCGS are monitored and sampled in accordance with Table 4.11.2.1.2-1 of the ODCM. The North Plant Vent (NPV) and South Plant Vent (SPV) are the final release points for most planned gaseous effluent releases. The NPV and SPV are continuously monitored for iodine, particulates and noble gases. These monitors have moving particulate and fixed charcoal filters. The particulate filters and charcoal cartridges are normally replaced and analyzed weekly. These analyses are performed on a multichannel analyzer. The NPV and SPV are also normally sampled weekly for noble gases and tritium.

A small quantity of gaseous effluent is released via the Filtration, Recirculation, and Ventilation System (FRVS) vent during FRVS testing periods. The FRVS is continuously monitored for noble gases when in service, and has fixed particulate and charcoal filters. When the system is in vent mode for greater than two hours, samples are collected at the end of the release period. During periods of extended runs, samples are normally taken weekly.

The detection requirements of Tables 4.11.2.1.2-1 of the ODCM are achieved or exceeded. Radionuclides detected at concentrations below the ODCM detection limit (LLD) are treated as being present. Radionuclides for which no activity was detected while meeting the required LLDs are treated as absent.

Batch Mode gaseous releases (i.e. primary containment purge) are quantified by pre-release sampling and isotopic analysis. In order to estimate the total radioactivity released, specific activities for each isotope are multiplied by the containment volume.

4.3 Estimated Total Error

The estimated total error of reported liquid and solid releases is within 25%.

The estimated total error of the reported continuous gaseous releases is within 50% when concentrations exceed detectable levels. This error is primarily due to variability of waste stream flow rates and changes in isotopic distributions of waste streams between sampling periods. The estimated total error of the reported batch gaseous releases is within 10%.

Error estimates for releases where sample activity is below the detectable concentration levels are not included since error estimates at the LLD are not defined.

5.0 BATCH RELEASES

Summaries of batch releases of gaseous and liquid effluents are provided in Tables 4A and 4B.

6.0 UNPLANNED RELEASES

During this reporting period the following unplanned release occurred:

a. Liquid

1. Number of releases: 1
2. Total activity released: 1.32E-06 Curies

Salem Unit 1

- On October 16, 2002, during the Salem Unit 1 Refueling Outage 1R15, the Service Water System was plugged and a valve was removed for inspection. While restoring the Service Water System after completion of the inspection, the plug was removed. Since the tide was too high, an intrusion of river water into the Service Water Valve room occurred. Some water was pumped back to the river from the floor to prevent damage to other equipment. The liquid was sampled, quantified and permitted as an unplanned release to the river. The activity released is included in Tables 2A4 and 2B4.

The impact of the above unplanned release on dose received to a member of the general public is negligible.

7.0 ELEVATED RADIATION MONITOR RESPONSES

During this reporting period, the following Effluent Radiation Monitor response occurred:

Total activity released: 3.50E-01 Curies

Hope Creek

- On June 22, 2002 the South Plant Vent Radiation Monitor went into alarm following a reactor trip. The elevated readings were attributed to the high noble gas inventory due to existing fuel defects. The activity associated with the effluent release is included in Tables 1A-3 and 1C-3 of this report.

8.0 MODIFICATION TO PREVIOUS RADIOACTIVE EFFLUENT RELEASE REPORTS

There were no modifications to previous Radioactive Effluent Release Reports during this reporting period.

PART B. GASEOUS EFFLUENTS

See Summary Tables 1A through 1C.

PART C. LIQUID EFFLUENTS

See Summary Tables 2A through 2B.

PART D. SOLID WASTE

See Summary in Table 3.

PART E. RADIOLOGICAL IMPACT ON MAN

The calculated individual doses in this section are based on the controlling dose pathways and age groups as described below. The estimated dose represents the maximum radiation dose that could be received by a member of the general public. The population dose impact is based on the evaluation year site-specific data (i.e., food production, milk production, feed for milk animals and seafood production).

The doses were calculated using methods described in Regulatory Guide 1.109 and represent calculations for the 12-month reporting interval. Individual doses from batch and continuous releases were calculated using the annual average historic meteorological dispersion factors as described in the respective Offsite Dose Calculation Manual. Population doses were calculated using the meteorological dispersion coefficients for the twelve month reporting interval.

Liquid Pathways

<u>Type</u>	<u>Age Group</u>	<u>Location</u>	<u>Pathway</u>
Total Body	Adult	Site Boundary	Seafood Ingestion
Organ	Adult	Site Boundary	Seafood Ingestion

Salem Unit 1 & 2

<u>Type</u>	<u>Dose</u>	<u>Limit</u>
Total Body	1.43E-02 mrem	3 mrem
Organ Dose (GI-LLI)	3.94E-02 mrem	10 mrem

Hope Creek

<u>Type</u>	<u>Dose</u>	<u>Limit</u>
Total Body	5.26E-05 mrem	3 mrem
Organ Dose (GI-LLI)	4.24E-04 mrem	10 mrem

<u>Site</u>	<u>Dose</u>	<u>Limit</u>
Population (Total)	5.99E-03 person-rem	N/A
Population (Average)	1.33E-06 mrem	N/A

Air Pathways

<u>Type</u>	<u>Age Group</u>	<u>Location</u>	<u>Pathway</u>
Total Body	All	Site Boundary	Direct Exposure
Skin	All	Site Boundary	Direct Exposure
Organ	Infant	4.9 mi. W.	Milk, Ground Plane, Inhalation

Salem Units 1&2

<u>Type</u>	<u>Dose</u>	<u>Limit</u>
Total Body	1.92E-02 mrem	500 mrem
Skin	5.80E-02 mrem	3000 mrem
Organ Dose (Thyroid)	1.35E-01 mrem	15 mrem

Hope Creek

<u>Type</u>	<u>Dose</u>	<u>Limit</u>
Total Body	2.29E-04 mrem	500 mrem
Skin	5.16E-04 mrem	3000 mrem
Organ Dose (Thyroid)	3.60E-02 mrem	15 mrem

<u>Site</u>	<u>Dose</u>	<u>Limit</u>
Population (Total)	3.90E-01 person-rem	N/A
Population (Average)	8.66E-05 mrem	N/A

Direct Radiation

Direct radiation may be estimated by thermoluminescent dosimetric (TLD) measurements. One method for comparing TLD measurements is by comparison with pre-operational data. It should be noted that the TLDs measure direct radiation from both the Salem and Hope Creek Generating Stations at Artificial Island, and natural background radiation.

TLD data for the twelve-month reporting period is given below:

<u>TLD</u>	<u>Location</u>	<u>Measurement</u>
1S-1	0.4 mile NNE	4.48 mrad/std. month
5S-1	4.0 mile E	3.68 mrad/std. month

These values are interpreted to represent natural background, since the values are within the statistical variation associated with the pre-operational program results which are 3.7 mrad/standard month for TLD 1S-1 and 4.2 mrad/standard month for TLD 5S-1.

Total Dose

40CFR190 limits the total dose to members of the public due to radioactivity and radiation from uranium fuel cycle sources to:

<25 mrem total body or any organ and;

<75 mrem thyroid for a calendar year.

For Artificial Island, the major sources of dose are from liquid and gaseous effluents from the Hope Creek and Salem plants.

The following doses to a "hypothetical maximum exposed individual" have been calculated for the twelve-month reporting period. They are the sum of gaseous and liquid pathway doses for the Salem 1 and 2 and Hope Creek plants:

1.69E-02	mrem	Total Body
4.21E-02	mrem	Organ (GI-LLI)
1.85E-01	mrem	Thyroid

Dose to members of the public due to activities inside the site boundary

Dose to members of the public is limited to 100 mrem total effective dose equivalent (TEDE) in a year in accordance with 10CFR20.1301. The definition of members of the public changed on September 11, 2001. The various food vendors that have previously comprised the maximally exposed group are no longer allowed on site. For this reporting period, the definition of the members of the public are the members of the New Jersey National Guard to augment the security force at the site. Their typical patrol spans the site, and the following locations 16S1; CA8 and CA15 (Hope Creek Barge Slip, Dredge Spoils and Baseball Field) are averaged to estimate their dose.

In accordance with the requirements of ODCM 6.9.1.8 (SGS) and 6.9.1.7 (HCGS), the dose to members of the public inside the site boundary has been calculated based on the following assumptions:

- a. The National Guard works a 40 hour week, therefore all doses are multiplied by 0.25 to assess their dose.

For the 12-month reporting period, January 1, 2002 to December 31, 2002 the calculated doses are:

2.29E-01	mrem	Total Body
2.01E-02	mrem	Organ (Lung)
3.24E-02	mrem	Thyroid

Assessment

1. Gaseous:

Gaseous effluents released from the Salem and Hope Creek Generating Stations resulted in a minimal dose to the hypothetical maximum exposed individual. The dose for the 12-month period was a small fraction of all applicable limits.

When compared to releases in the previous reporting period, the Salem noble gas effluents decreased. Hope Creek noble gas effluents increased due to a forced plant outage and fuel defects. Gaseous effluent releases for the Site continue to remain well within Federal limits and are comparable to other nuclear utilities. Fuel integrity and gaseous effluent processing equipment continue to be maintained in order to ensure that all releases of gaseous radioactivity are As-Low-As-Reasonably-Achievable (ALARA).

2. Liquids:

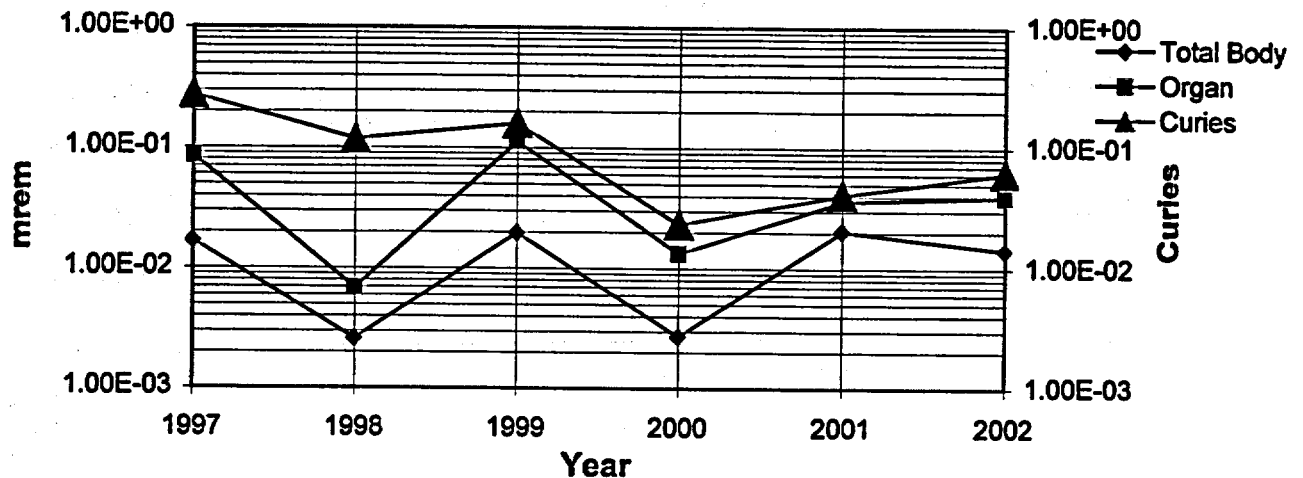
Liquid effluents released from the Salem and Hope Creek Generating Stations resulted in a minimal dose to the hypothetical maximum exposed individual and were well within all applicable limits.

When compared to releases in the previous reporting period, the Hope Creek liquid effluents decreased. The Salem liquid effluents remained essentially the same even though there were 2 Refueling Outages during this reporting period. Liquid effluent releases continue to remain well within Federal limits and compare favorably to other nuclear utilities.

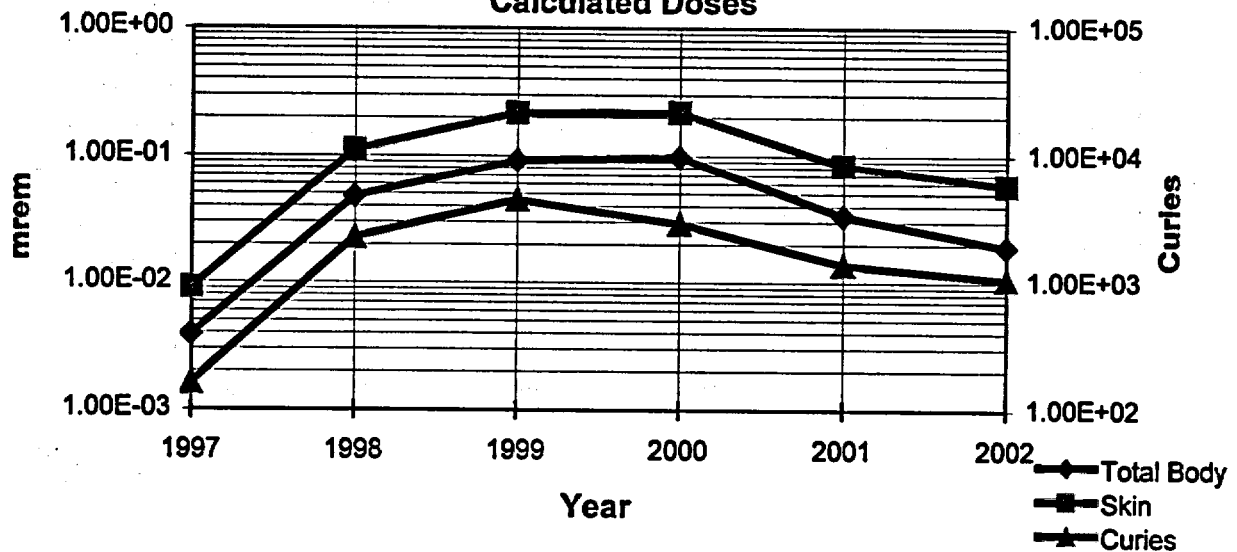
Trends

The following two trend graphs show the total curies of liquid and gaseous effluents released for Salem from 1997 through 2002. Calculated doses in the graphs are to the hypothetical maximum exposed individual.

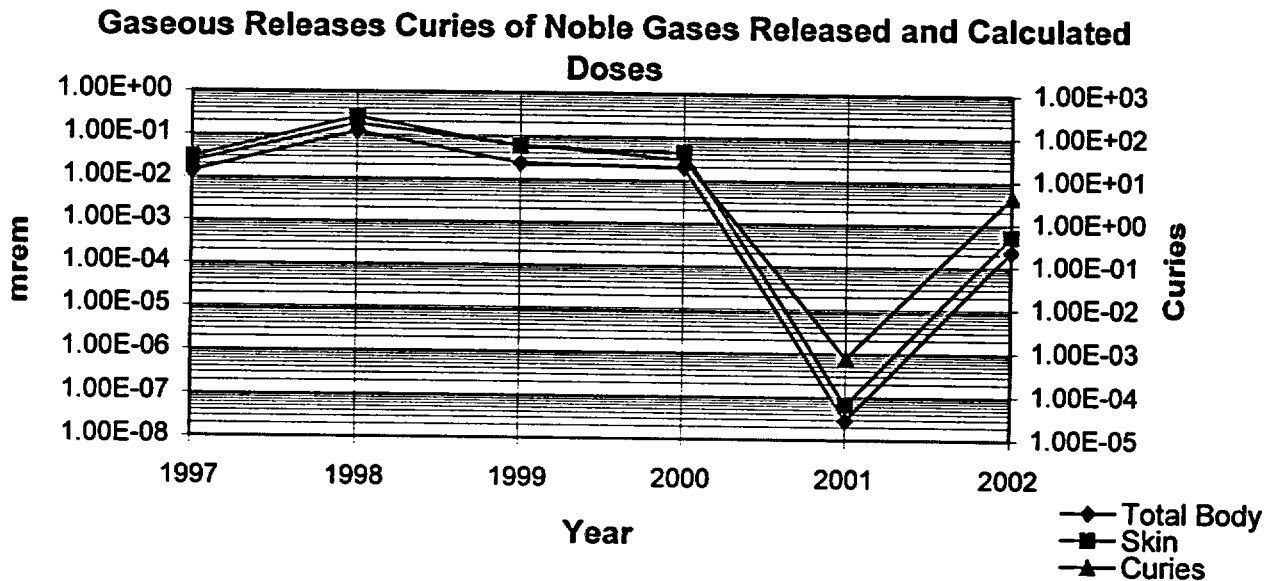
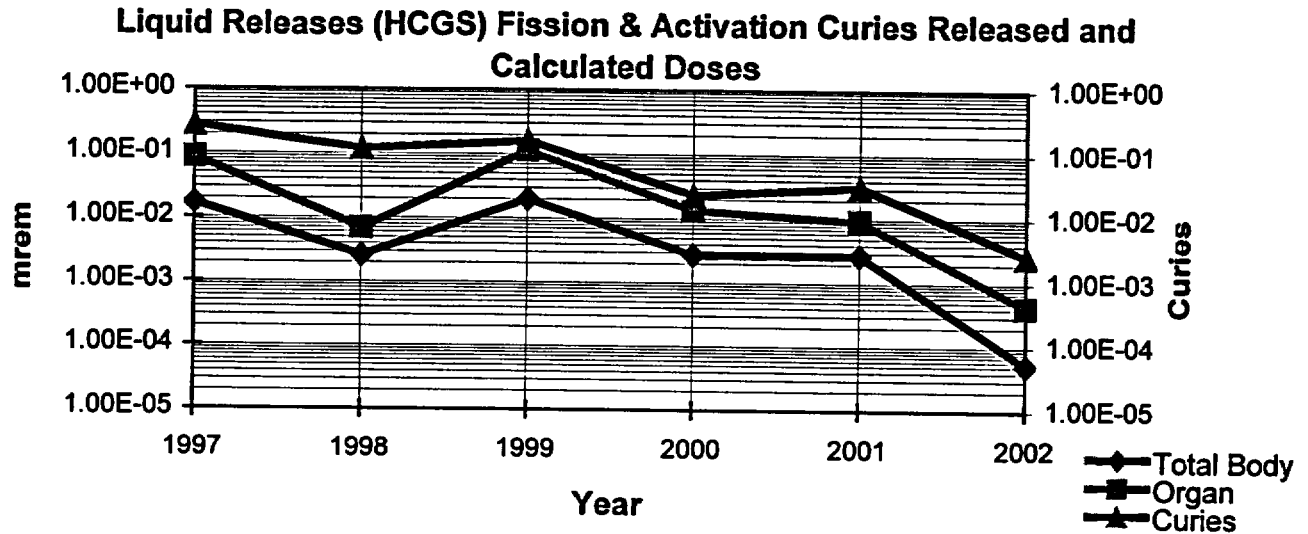
Liquid Releases (SGS) Fission & Activation Curies Released and Calculated Doses



Gaseous Releases (SGS) Curies of Noble Gases Released and Calculated Doses



The following two trend graphs show the total curies of liquid and gaseous effluents released for Hope Creek from 1997 through 2002. Calculated doses in the graphs are to the hypothetical maximum exposed individual.



PART F. METEOROLOGICAL DATA

Cumulative joint wind frequency distributions by atmospheric stability class at the 33 feet elevation are provided for 2002 at the end of this report in Appendix A.

Meteorological Data Recovery

The meteorological data recovery for the reporting period did not meet the guidance specified in Safety Guide 23 and other related standards. The specified requirement is greater than 90 percent. The following table (on page 19) shows the recovery statistics for this reporting period.

The primary cause of the less than 90 percent meteorological data recovery was the complete replacement of the Artificial Island Meteorological Monitoring System. The actual duration of the outage exceeded the schedule.

During the replacement of the primary monitoring system instrumentation and data acquisition system, onsite meteorological data was available from the backup system. The backup monitoring system does not provide atmospheric stability indication by means of temperature difference measurement with respect to elevation but, does provide a sigma theta generated stability index (i.e., measured by wind direction fluctuation). Had an unusual radiological effluent release occurred during the primary system outage, evaluation of dose would have been accomplished using the backup wind speed/ direction and sigma theta (and other estimates of atmospheric stability as appropriate).

While several parameters did not meet the 90 percent recovery goal and thus would be reflected in the joint frequency tables, it does not significantly affect the annual population dose estimate. The basis for this position is due to the fact that the annual dose estimates are based on annual X/Qs (actually performed as two calculations, one for the first six months and one for the remainder of the year). The radiological effluent releases are averaged over the corresponding period (i.e., release totals averaged over the reporting period). While the duration lasted longer than expected, it did not occur in a fashion that would significantly bias the dose calculation. In addition during the period of missing meteorological data there were no unusual radiological effluent releases from either the Salem or Hope Creek Generating Stations.

Corrective Action Notification 20128819 was generated to identify, document and rectify this problem. The corrective actions included replacement of failed components by the manufacturer and validation of the missing data. The Meteorological System is upgraded to prevent recurrence.

The six month X/Qs for this period are in general agreement with previous dispersion estimates for the same time period.

The following were the recovery statistics for calendar year 2002.

33' Wind Direction	33' Wind Speed	150' Wind Direction	150' Wind Speed
91.8%	91.8%	89.9%	92.6%

300' Wind Direction	300' Wind Speed	Back-up Wind Direction	Back-up Wind Speed
93.4%	93.4%	90.8%	87.6%

Ambient Temperature 33'	150'-33' Differential Temperature	300'-33' Differential Temperature	Dew Point
88.8%	88.5%	91.7%	86.4%

Solar Radiation	Barometric Pressure	Precipitation
93.1%	92.9%	92.9%

PART G. OFFSITE DOSE CALCULATION MANUAL (ODCM) CHANGES

The Hope Creek ODCM was revised once in 2002. Revision 20 became effective 4/5/2002 it accomplished the following:

Revision Summary:

1) Revised Section 1.0, Definition Paragraph 1.35 to change rated core thermal power from 3293 to 3339 MWth.

Justification: Revision to Rated Power is based on the analysis performed for the Power Uprate Project (Design Change Package 80010289).

2) Revised Table 4.3.7.10-1 to clarify channel check surveillance requirements to include verification of sample flows during sump operation. Added note (5), and deleted item 3.c.

Justification: The requirements to perform channel check ODCM for the Turbine Building Circulating Water Dewatering Discharge Monitor (RE4557) was previously analyzed and included in Rev. 17 of the ODCM and was inadvertently omitted during the revision of Rev. 18 to Rev 19. Item 3.c was deleted as there is no process Flow Rate Measurement device.

This revision also included the following editorial changes, and enhancements:

- 1) Revised subtitle of Section "6.9.1.8" on page 73 to "6.9.1.7".
- 2) Revised 1.2.1 last paragraph, changed "as" to "at".
- 3) Revised 1.2.2 to correct typographical error in the first paragraph, changed "summarized" to "summarizes".
- 4) Revised Figure 1-1 to remove the type over "Solution Evaporator".
- 5) Revised Appendix E to correct typographical error in the second paragraph, changed "4=ENG" to "4=ENE".

A copy of the revised Hope Creek ODCM Revision 20 is included in Appendix C of this report.

The Salem ODCM was revised once in 2002. Revision 15 became effective 7/11/2002 it accomplished the following:

Revision Summary:

1) Revised rated core thermal power for Salem Unit 1 and Unit 2 from 3411 to 3459 MWt, in Section 1.0 Definitions, paragraph 1.25.

Justification: Revision to Rated Power is based on the analysis performed for the Power Uprate Project (Design Change Package 80010287).

2) Revised Table 3.3-13 to clarify ODCM requirements for Containment Pressure-Vacuum Reliefs with less than the required minimum number of operable channels. This change is controlled by Technical Specifications 6.14.2, 6.8.4.g.1 and 3.3.3.1 and complies with NUREG-1301 and 10CFR20 requirements.

3) Justification: This change is controlled by Technical Specifications 6.14.2, 6.8.4.g.1 and 3.3.3.1 and complies with NUREG-1301 and 10CFR20 requirements. Based on the above guidance, Containment Pressure Reliefs could be performed as batch releases in the event both Radiation Monitors are inoperable. This method would require 2 independent grab samples collected and analyzed and a pre-release permit initiated to validate that the containment pressure relief would not exceed any ODCM or regulatory limits for the concentration of noble gases released as well as the dose impact of the pressure relief releases.

This revision also included the following editorial changes, and enhancements:

1) Revised Table 3.3-13 on page 25 to correct the Salem Unit designation of Radiation Monitors and flow recorder number, also revised 3 / 4 .3.3.9 on page 61 to remove the Unit 2 Accident Radiation Monitor channels.

2) Replaced Site Map on page 69 to enhance legibility.

A copy of the revised Salem ODCM Revision 15 is included in Appendix D of this report.

PART H. INOPERABLE MONITORS

During this reporting period there were no effluent radiation monitors inoperable for greater than 30 days.

PART I. PROCESS CONTROL PROGRAM (PCP) CHANGES

During the reporting period, there were no PCP changes.

PART J. ENVIRONMENTAL MONITORING LOCATION CHANGES

During the reporting period, the objectives and effectiveness of the Radioactive Environmental Monitoring Program (REMP) were maintained. Additionally, there were no changes to the REMP monitoring locations, or the sampling locations and periodicity.

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	3.07E+01	2.38E+01	50%
2.	Average Release Rate For Period	μCi/sec	3.94E+00	3.02E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.2(a))	%	2.42E-02	1.97E-02	
B.	Iodines				
1.	Total Iodine-131	Ci	2.61E-04	4.09E-04	50%
2.	Average Release Rate For Period	μCi/sec	3.36E-05	5.20E-05	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	2.79E-02	4.12E-02	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	7.79E-06	8.11E-06	50%
2.	Average Release Rate For Period	μCi/sec	1.00E-06	1.03E-06	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	2.79E-02	4.12E-02	
4.	Gross Alpha	Ci	0.00E+00	0.00E+00	
D.	Tritium				
1.	Total Release	Ci	4.78E+01	3.84E+01	50%
2.	Average Release Rate For Period	μCi/sec	6.15E+00	4.89E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	2.79E-02	4.12E-02	

1. For batch releases, the estimated overall error is 10%.

2. Iodines, Tritium, and Particulates are treated as a group.

The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	1.72E+02	6.73E+02	50%
2.	Average Release Rate For Period	μCi/sec	2.22E+01	8.56E+01	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.2(a))	%	1.52E-01	5.29E-01	
B.	Iodines				
1.	Total Iodine-131	Ci	4.73E-04	1.59E-02	50%
2.	Average Release Rate For Period	μCi/sec	6.08E-05	2.03E-03	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.64E-02	1.50E+00	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	1.07E-05	6.02E-04	50%
2.	Average Release Rate For Period	μCi/sec	1.37E-06	7.65E-05	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.64E-02	1.50E+00	
4.	Gross Alpha	Ci	0.00E+00	0.00E+00	
D.	Tritium				
1.	Total Release	Ci	2.92E+01	5.76E+01	50%
2.	Average Release Rate For Period	μCi/sec	3.75E+00	7.32E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.64E-02	1.50E+00	

1. For batch releases, the estimated overall error is 10%.
2. Iodines, Tritium, and Particulates are treated as a group.
The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	0.00E+00	3.87E+00	50%
2.	Average Release Rate For Period	μCi/sec	0.00E+00	4.93E-01	
3.	Percent of Technical Specification Limit (ODCM 3.11.2.2(a))	%	0.00E+00	4.17E-03	
B.	Iodines				
1.	Total Iodine-131	Ci	4.52E-05	1.19E-04	50%
2.	Average Release Rate For Period	μCi/sec	5.82E-06	1.51E-05	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	6.77E-03	1.65E-02	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	1.67E-05	2.01E-04	50%
2.	Average Release Rate For Period	μCi/sec	2.15E-06	2.56E-05	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	6.77E-03	1.65E-02	
D.	Gross Alpha	Ci	0.00E+00	0.00E+00	
	Tritium				
1.	Total Release	Ci	5.25E+00	6.30E+00	50%
2.	Average Release Rate For Period	μCi/sec	6.75E-01	8.01E-01	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	6.77E-03	1.65E-02	

1. For batch releases, the estimated overall error is 10%.
2. Iodines, Tritium, and Particulates are treated as a group.
The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-4
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	1.67E+01	1.11E+02	50%
2.	Average Release Rate For Period	μCi/sec	2.11E+00	1.39E+01	
3.	Percent of Technical Specification Limit (ODCM 3.11.2.2(a))	%	1.57E-02	9.22E-02	
B.	Iodines				
1.	Total Iodine-131	Ci	2.65E-05	2.50E-03	50%
2.	Average Release Rate For Period	μCi/sec	3.33E-06	3.15E-04	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.63E-03	2.66E-01	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	9.20E-06	5.23E-05	50%
2.	Average Release Rate For Period	μCi/sec	1.16E-06	6.58E-06	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.63E-03	2.66E-01	
4.	Gross Alpha	Ci	0.00E+00	0.00E+00	
D.	Tritium				
1.	Total Release	Ci	8.46E+01	2.85E+01	50%
2.	Average Release Rate For Period	μCi/sec	1.06E+01	3.58E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.63E-03	2.66E-01	

1. For batch releases, the estimated overall error is 10%.

2. Iodines, Tritium, and Particulates are treated as a group.
The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-5
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	1.08E+01	1.67E+01	50%
2.	Average Release Rate For Period	μCi/sec	1.36E+00	2.11E+00	
3.	Percent of Technical Specification Limit (ODCM 3.11.2.2(a))	%	9.10E-03	1.49E-02	
B.	Iodines				
1.	Total Iodine-131	Ci	3.58E-05	4.65E-05	50%
2.	Average Release Rate For Period	μCi/sec	4.50E-06	5.85E-06	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.54E-03	6.91E-03	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	6.91E-06	1.56E-05	50%
2.	Average Release Rate For Period	μCi/sec	8.69E-07	1.97E-06	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.54E-03	6.91E-03	
D.	Gross Alpha Tritium				
1.	Total Release	Ci	7.45E+01	3.55E+01	50%
2.	Average Release Rate For Period	μCi/sec	9.37E+00	4.46E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	8.54E-03	6.91E-03	

1. For batch releases, the estimated overall error is 10%.
2. Iodines, Tritium, and Particulates are treated as a group.
The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1A-6
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error ¹
A.	Fission and Activation Gases				
1.	Total Release	Ci	4.42E-01	0.00E+00	50%
2.	Average Release Rate For Period	μCi/sec	5.56E-02	0.00E+00	
3.	Percent of Technical Specification Limit (ODCM 3.11.2.2(a))	%	1.13E-03	0.00E+00	
B.	Iodines				
1.	Total Iodine-131	Ci	3.14E-04	2.96E-03	50%
2.	Average Release Rate For Period	μCi/sec	3.95E-05	3.72E-04	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.28E-02	4.14E-01	
C.	Particulates				
1.	Particulates With Half-lives > 8 days	Ci	0.00E+00	0.00E+00	50%
2.	Average Release Rate For Period	μCi/sec	0.00E+00	0.00E+00	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.28E-02	4.14E-01	
4.	Gross Alpha	Ci	0.00E+00	0.00E+00	
D.	Tritium				
1.	Total Release	Ci	8.37E+00	4.12E+00	50%
2.	Average Release Rate For Period	μCi/sec	1.05E+00	5.19E-01	
3.	Percent of Technical Specification Limit ² (ODCM 3.11.2.3(a))	%	4.28E-02	4.14E-01	

1. For batch releases, the estimated overall error is 10%.
 2. Iodines, Tritium, and Particulates are treated as a group.
 The percent TS Limit is based on most limiting nuclide and Organ dose

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

SALEM AND HOPE CREEK GENERATING STATION

TABLE 1B

EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT

JANUARY – DECEMBER 2001

GASEOUS EFFLUENTS – ELEVATED RELEASES

Salem and Hope Creek Generating Stations have no elevated release points.

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES**

Nuclides		<u>Continuous Mode</u>		<u>Batch Mode</u>		
		<u>Units</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
<u>Released</u>						
1.	Fission Gases					
	Argon-41	Ci	0.00E+00	0.00E+00	1.44E-02	6.97E-03
	Krypton-85	Ci	0.00E+00	0.00E+00	2.72E+00	2.56E+00
	Xenon-133	Ci	1.05E+01	9.40E+00	1.67E+01	4.27E+00
	Xenon-133m	Ci	0.00E+00	0.00E+00	7.07E-02	1.51E+00
	Xenon-135	Ci	0.00E+00	0.00E+00	2.67E-02	2.14E-02
	Xenon-131m	Ci	0.00E+00	0.00E+00	5.71E-01	5.98E+00
	Totals	Ci	1.05E+01	9.40E+00	2.02E+01	1.44E+01
2.	Iodine					
	Iodine-131	Ci	2.61E-04	4.09E-04	0.00E+00	0.00E+00
	Iodine-132	Ci	2.59E-05	0.00E+00	0.00E+00	0.00E+00
	Iodine-133	Ci	1.99E-04	3.52E-04	0.00E+00	0.00E+00
	Totals	Ci	4.86E-04	7.61E-04	0.00E+00	0.00E+00
3.	Particulates (Half-life >8 days)					
	Cobalt-58	Ci	0.00E+00	4.18E-06	0.00E+00	0.00E+00
	Cobalt-60	Ci	2.63E-06	1.19E-06	0.00E+00	0.00E+00
	Cesium-134	Ci	2.77E-07	0.00E+00	0.00E+00	0.00E+00
	Cesium-137	Ci	4.89E-06	2.68E-06	0.00E+00	0.00E+00
	Strontium-90	Ci	0.00E+00	6.12E-08	0.00E+00	0.00E+00
	Totals	Ci	7.79E-06	8.11E-06	0.00E+00	0.00E+00
4.	Tritium	Ci	4.76E+01	3.83E+01	2.67E-01	1.13E-01

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
GASEOUS EFFLUENTS – GROUND LEVEL RELEASES**

Nuclides	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
<u>Released</u>					
1. Fission Gases					
Argon-41	Ci	0.00E+00	0.00E+00	2.29E-02	0.00E+00
Krypton-85	Ci	0.00E+00	0.00E+00	3.89E+01	5.10E+01
Krypton-85m	Ci	0.00E+00	0.00E+00	0.00E+00	4.57E-03
Xenon-131m	Ci	0.00E+00	0.00E+00	2.40E+01	7.02E+00
Xenon-133	Ci	1.84E+01	4.13E+01	9.01E+01	5.67E+02
Xenon-133m	Ci	0.00E+00	0.00E+00	6.76E-01	4.73E+00
Xenon-135	Ci	0.00E+00	7.41E-01	2.92E-01	1.18E+00
Totals	Ci	1.84E+01	4.20E+01	1.54E+02	6.31E+02
2. Iodine					
Iodine-131	Ci	4.73E-04	1.59E-02	0.00E+00	0.00E+00
Iodine-133	Ci	1.11E-04	3.22E-03	0.00E+00	0.00E+00
Iodine-132	Ci	0.00E+00	2.38E-03	0.00E+00	0.00E+00
Totals	Ci	5.84E-04	2.15E-02	0.00E+00	0.00E+00
3. Particulates (Half-life >8 days)					
Cobalt-58	Ci	0.00E+00	6.20E-06	0.00E+00	5.79E-04
Cobalt-60	Ci	3.26E-06	2.08E-06	0.00E+00	0.00E+00
Cesium-137	Ci	5.93E-06	1.38E-05	0.00E+00	0.00E+00
Cesium-134	Ci	1.49E-06	3.07E-07	0.00E+00	0.00E+00
Totals	Ci	1.07E-05	2.24E-05	0.00E+00	5.79E-04
4. Tritium	Ci	2.90E+01	5.22E+01	1.70E-01	5.37E+00

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
GASEOUS EFFLUENTS – GROUND LEVEL RELEASES**

Nuclides Released	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
1. Fission Gases					
Xenon-133	Ci	0.00E+00	3.26E+00	0.00E+00	0.00E+00
Xenon-135	Ci	0.00E+00	6.10E-01	0.00E+00	0.00E+00
Krypton-85m	Ci	0.00E+00	3.59E-03	0.00E+00	0.00E+00
Totals	Ci	0.00E+00	3.87E+00	0.00E+00	0.00E+00
2. Iodine					
Iodine-131	Ci	4.52E-05	1.19E-04	0.00E+00	0.00E+00
Iodine-133	Ci	3.85E-04	4.76E-04	0.00E+00	0.00E+00
Totals	Ci	4.31E-04	5.95E-04	0.00E+00	0.00E+00
3. Particulates (Half-life >8 days)					
Barium-139	Ci	0.00E+00	1.68E-05	0.00E+00	0.00E+00
Cobalt-58	Ci	0.00E+00	3.72E-06	0.00E+00	0.00E+00
Cobalt-60	Ci	0.00E+00	4.52E-05	0.00E+00	0.00E+00
Cerium-143	Ci	8.22E-05	0.00E+00	0.00E+00	0.00E+00
Manganese-54	Ci	1.67E-05	1.19E-04	0.00E+00	0.00E+00
Zinc-65	Ci	0.00E+00	3.37E-05	0.00E+00	0.00E+00
Totals	Ci	9.89E-05	2.18E-04	0.00E+00	0.00E+00
4. Tritium	Ci	5.25E+00	6.30E+00	0.00E+00	0.00E+00

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-4
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES**

Nuclides	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
<u>Released</u>					
1. Fission Gases					
Argon-41	Ci	0.00E+00	0.00E+00	1.88E-01	1.04E-02
Krypton-85	Ci	0.00E+00	0.00E+00	4.90E+00	1.64E+01
Krypton-85m	Ci	0.00E+00	0.00E+00	6.97E-04	0.00E+00
Xenon-131m	Ci	0.00E+00	0.00E+00	5.01E-02	6.62E-01
Xenon-133	Ci	0.00E+00	4.42E+01	1.15E+01	4.79E+01
Xenon-133m	Ci	0.00E+00	0.00E+00	9.99E-02	4.20E-01
Xenon-135	Ci	0.00E+00	6.89E-01	3.51E-02	2.35E-01
Totals	Ci	0.00E+00	4.49E+01	1.67E+01	6.56E+01
2. Iodine					
Iodine-130	Ci	0.00E+00	9.85E-07	0.00E+00	0.00E+00
Iodine-131	Ci	2.64E-05	2.50E-03	0.00E+00	0.00E+00
Iodine-132	Ci	0.00E+00	2.84E-04	0.00E+00	0.00E+00
Iodine-133	Ci	3.22E-04	1.11E-04	0.00E+00	0.00E+00
Totals	Ci	3.48E-04	2.90E-03	0.00E+00	0.00E+00
3. Particulates					
(Half-life >8 days)					
Cobalt-58	Ci	1.04E-06	4.75E-05	0.00E+00	0.00E+00
Cobalt-60	Ci	1.43E-06	2.08E-06	0.00E+00	0.00E+00
Strontium-90	Ci	9.27E-10	0.00E+00	0.00E+00	0.00E+00
Cesium-137	Ci	6.73E-06	2.68E-06	0.00E+00	0.00E+00
Totals	Ci	9.20E-06	5.23E-05	0.00E+00	0.00E+00
4. Tritium	Ci	8.37E+01	2.70E+01	8.55E-01	1.44E+00

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-5
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES**

Nuclides Released	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
1. Fission Gases					
Argon-41	Ci	0.00E+00	0.00E+00	1.93E-02	5.76E-02
Krypton-85	Ci	0.00E+00	0.00E+00	1.78E+00	4.01+00
Xenon-131m	Ci	0.00E+00	0.00E+00	3.11E-02	7.01E-02
Xenon-133	Ci	0.00E+00	1.30E-06	8.92E+00	1.25E+01
Xenon-133m	Ci	0.00E+00	0.00E+00	4.96E-02	4.35E-02
Xenon-135	Ci	0.00E+00	0.00E+00	1.75E-02	1.82E-02
Totals	Ci	0.00E+00	1.30E-06	1.08E+01	1.67E+01
2. Iodine					
Iodine-131	Ci	3.58E-05	4.65E-05	0.00E+00	0.00E+00
Iodine-133	Ci	4.21E-05	1.09E-04	0.00E+00	0.00E+00
Totals	Ci	7.79E-05	1.56E-04	0.00E+00	0.00E+00
3. Particulates (Half-life >8 days)					
Cobalt-58	Ci	8.68E-07	1.19E-05	0.00E+00	0.00E+00
Cobalt-60	Ci	1.76E-06	1.49E-06	0.00E+00	0.00E+00
Cesium-137	Ci	4.28E-06	2.27E-06	0.00E+00	0.00E+00
Totals	Ci	6.91E-06	1.56E-05	0.00E+00	0.00E+00
4. Tritium	Ci	7.38E+01	3.50E+01	7.28E-01	4.98E-01

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 1C-6
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
GASEOUS EFFLUENTS – GROUND LEVEL RELEASES**

Nuclides Released	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
1. Fission Gases					
Xenon-133	Ci	2.08E-02	0.00E+00	0.00E+00	0.00E+00
Xenon-135	Ci	1.65E-02	0.00E+00	0.00E+00	0.00E+00
Xenon-137	Ci	1.55E-03	0.00E+00	0.00E+00	0.00E+00
Xenon-135m	Ci	5.74E-03	0.00E+00	0.00E+00	0.00E+00
Xenon-138	Ci	9.20E-03	0.00E+00	0.00E+00	0.00E+00
Krypton-88	Ci	3.25E-03	0.00E+00	0.00E+00	0.00E+00
Krypton-85m	Ci	3.85E-01	0.00E+00	0.00E+00	0.00E+00
Totals	Ci	4.42E-01	0.00E+00	0.00E+00	0.00E+00
2. Iodine					
Iodine-131	Ci	3.14E-04	2.96E-03	0.00E+00	0.00E+00
Iodine-133	Ci	1.49E-03	2.68E-02	0.00E+00	0.00E+00
Totals	Ci	1.81E-03	2.98E-02	0.00E+00	0.00E+00
3. Particulates (Half-life >8 days)					
Totals	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Tritium	Ci	8.37E+00	4.12E+00	0.00E+00	0.00E+00

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	7.70E-03	5.00E-03	25%
2.	Average Diluted Concentration	μCi/ml	1.72E-11	9.95E-12	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	1.09E-04	1.87E-05	
B.	Tritium				
1.	Total Release	Ci	2.95E+02	1.28E+02	25%
2.	Average Diluted Concentration	μCi/ml	6.57E-07	2.55E-07	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	2.19E-02	8.50E-03	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	3.92E-02	3.88E-03	25%
2.	Average Diluted Concentration	μCi/ml	8.73E-11	7.72E-12	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	4.37E-05	3.86E-06	
D.	Gross Alpha				
1.	Total Release	Ci	0.00E+00	1.70E-04	25%
	Average Diluted Concentration	μCi/ml	0.00E+00	3.39E-13	
E.	Volume of Waste Release (Prior to Dilution)	Liters	1.45E+06	1.38E+06	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	4.49E+11	5.02E+11	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	1.99E-03	1.64E-03	25%
2.	Average Diluted Concentration	μCi/ml	4.43E-12	5.02E-12	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	1.68E-06	1.36E-05	
B.	Tritium				
1.	Total Release	Ci	1.22E+02	3.39E+01	25%
2.	Average Diluted Concentration	μCi/ml	2.72E-07	1.04E-07	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	9.07E-03	3.47E-03	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	2.42E-02	7.31E-01	25%
2.	Average Diluted Concentration	μCi/ml	5.38E-11	2.23E-09	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	2.69E-05	1.12E-03	
D.	Gross Alpha				
1.	Total Release	Ci	2.13E-05	1.04E-04	25%
	Average Diluted Concentration	μCi/ml	4.47E-14	3.18E-13	
E.	Volume of Waste Release (Prior to Dilution)	Liters	7.36E+05	2.82E+06	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	4.49E+11	3.27E+11	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	1 st Quarter	2 nd Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	9.42E-06	1.98E-03	25%
2.	Average Diluted Concentration	μCi/ml	8.83E-13	1.39E-10	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	4.76E-08	1.75E-05	
B.	Tritium				
1.	Total Release	Ci	2.62E-01	1.07E+00	25%
2.	Average Diluted Concentration	μCi/ml	2.46E-08	7.51E-08	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	8.20E-04	2.50E-03	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	0.00E+00	1.23E-06	25%
2.	Average Diluted Concentration	μCi/ml	0.00E+00	8.61E-14	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	0.00E+00	4.30E-08	
D.	Gross Alpha				
1.	Total Release	Ci	0.00E+00	0.00E+00	25%
	Average Diluted Concentration	μCi/ml	0.00E+00	0.00E+00	
E.	Volume of Waste Release (Prior to Dilution)	Liters	4.91E+07	5.00E+07	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	1.07E+10	1.42E+10	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-4
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	1.36E-03	1.77E-02	25%
2.	Average Diluted Concentration	μCi/ml	2.58E-12	4.58E-11	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	1.60E-05	1.87E-04	
B.	Tritium				
1.	Total Release	Ci	1.14E+02	1.75E+02	25%
2.	Average Diluted Concentration	μCi/ml	2.16E-07	4.55E-07	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	7.20E-03	1.52E-02	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	3.25E-04	8.23E-04	25%
2.	Average Diluted Concentration	μCi/ml	6.16E-13	2.14E-12	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	3.08E-07	1.07E-06	
D.	Gross Alpha				
	Total Release	Ci	2.83E-04	0.00E+00	25%
	Average Diluted Concentration	μCi/ml	5.37E-13	0.00E+00	
E.	Volume of Waste Release (Prior to Dilution)	Liters	7.54E+05	1.06E+06	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	5.27E+11	3.85E+11	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-5
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	2.63E-03	2.41E-02	25%
2.	Average Diluted Concentration	μCi/ml	5.52E-12	5.24E-11	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	3.20E-05	5.90E-05	
B.	Tritium				
1.	Total Release	Ci	2.46E+01	4.02E+01	25%
2.	Average Diluted Concentration	μCi/ml	5.16E-08	8.73E-08	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	1.72E-03	2.91E-03	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	2.69E-05	6.62E-05	25%
2.	Average Diluted Concentration	μCi/ml	5.64E-14	1.44E-13	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	2.82E-08	7.20E-08	
D.	Gross Alpha				
	Total Release	Ci	3.22E-05	2.23E-05	25%
	Average Diluted Concentration	μCi/ml	6.75E-14	4.85E-14	
E.	Volume of Waste Release (Prior to Dilution)	Liters	4.21E+05	3.10E+05	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	4.77E+11	4.60E+11	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2A-6
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES**

		Units	3 rd Quarter	4 th Quarter	Est. Total Error
A.	Fission and Activation Products				
1.	Total Release	Ci	8.67E-05	5.54E-04	25%
2.	Average Diluted Concentration	μCi/ml	4.82E-12	4.21E-11	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.2(a))	%	1.46E-05	4.33E-13	
B.	Tritium				
1.	Total Release	Ci	1.48E+00	1.08E+00	25%
2.	Average Diluted Concentration	μCi/ml	8.22E-14	8.18E-09	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	2.74E-09	2.73E-04	
C.	Dissolved and Entrained Noble Gases				
1.	Total Release	Ci	2.40E-05	0.00E+00	25%
2.	Average Diluted Concentration	μCi/ml	1.33E-12	0.00E+00	
3.	Percent of Technical Specification Limit (ODCM 3.11.1.1)	%	6.66E-07	0.00E+00	
D.	Gross Alpha				25%
	Total Release	Ci	0.00E+00	0.00E+00	
	Average Diluted Concentration	μCi/ml	0.00E+00	0.00E+00	
E.	Volume of Waste Release (Prior to Dilution)	Liters	5.04E+07	5.02E+07	25%
F.	Volume of Dilution Water Used During Entire Period	Liters	1.80E+10	1.32E+10	25%

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
LIQUID EFFLUENTS**

Nuclides Released	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
1. Fission and Activation Products					
Manganese-54	Ci	0.00E+00	0.00E+00	0.00E+00	1.55E-05
Barium-139	Ci	0.00E+00	0.00E+00	2.20E-05	0.00E+00
Chromium-51	Ci	0.00E+00	0.00E+00	6.56E-05	0.00E+00
Cobalt-57	Ci	0.00E+00	0.00E+00	1.44E-05	6.03E-06
Cobalt-58	Ci	0.00E+00	0.00E+00	2.13E-03	3.73E-03
Cobalt-60	Ci	0.00E+00	0.00E+00	4.55E-04	3.76E-04
Cesium-134	Ci	0.00E+00	0.00E+00	6.67E-04	9.94E-05
Cesium-137	Ci	0.00E+00	0.00E+00	9.14E-04	2.38E-04
Iron-55	Ci	0.00E+00	0.00E+00	1.02E-03	0.00E+00
Iron-59	Ci	0.00E+00	0.00E+00	0.00E+00	5.01E-06
Iodine-131	Ci	0.00E+00	0.00E+00	2.54E-05	3.57E-05
Iodine-132	Ci	0.00E+00	0.00E+00	0.00E+00	4.50E-05
Iodine-133	Ci	0.00E+00	0.00E+00	2.50E-06	0.00E+00
Antimony-122	Ci	0.00E+00	0.00E+00	4.25E-05	0.00E+00
Antimony-124	Ci	0.00E+00	0.00E+00	2.21E-05	3.34E-05
Antimony-125	Ci	0.00E+00	0.00E+00	2.32E-03	3.08E-04
Antimony-126	Ci	0.00E+00	0.00E+00	0.00E+00	1.14E-05
Niobium-95	Ci	0.00E+00	0.00E+00	0.00E+00	2.41E-05
Niobium-97	Ci	0.00E+00	0.00E+00	0.00E+00	6.29E-06
Tellurium-132	Ci	0.00E+00	0.00E+00	0.00E+00	6.02E-05
Totals	Ci	0.00E+00	0.00E+00	7.70E-03	5.00E-03
2. Tritium	Ci	0.00E+00	0.00E+00	2.95E+02	1.28E+02
3. Dissolved and Entrained Noble Gases					
Xenon-133	Ci	0.00E+00	0.00E+00	3.79E-02	2.54E-03
Xenon-131m	Ci	0.00E+00	0.00E+00	1.27E-03	1.34E-03
Totals	Ci	0.00E+00	0.00E+00	3.92E-02	3.88E-03

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
LIQUID EFFLUENTS**

Nuclides Released	Units	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
1. Fission and Activation Products					
Manganese-54	Ci	0.00E+00	0.00E+00	0.00E+00	4.57E-07
Cobalt-58	Ci	0.00E+00	0.00E+00	3.05E-04	6.21E-04
Cobalt-60	Ci	0.00E+00	0.00E+00	3.39E-05	5.02E-05
Cesium-134	Ci	0.00E+00	0.00E+00	0.00E+00	6.35E-06
Cesium-137	Ci	0.00E+00	0.00E+00	7.93E-05	6.42E-05
Iron-55	Ci	0.00E+00	0.00E+00	6.13E-04	0.00E+00
Iron-59	Ci	0.00E+00	0.00E+00	0.00E+00	3.86E-04
Iodine-131	Ci	0.00E+00	0.00E+00	0.00E+00	8.80E-07
Antimony-122	Ci	0.00E+00	0.00E+00	0.00E+00	5.23E-07
Antimony-124	Ci	0.00E+00	0.00E+00	0.00E+00	4.29E-05
Antimony-125	Ci	0.00E+00	0.00E+00	9.59E-04	3.93E-04
Antimony-126	Ci	0.00E+00	0.00E+00	0.00E+00	7.03E-05
Niobium-95	Ci	0.00E+00	0.00E+00	0.00E+00	8.56E-06
Totals	Ci	0.00E+00	0.00E+00	1.99E-03	1.64E-03
2. Tritium	Ci	0.00E+00	0.00E+00	1.22E+02	3.39E+01
3. Dissolved and Entrained Noble Gases					
Xenon-133	Ci	0.00E+00	0.00E+00	2.30E-02	6.48E-01
Xenon-133m	Ci	0.00E+00	0.00E+00	1.27E-05	9.42E-03
Xenon-135	Ci	0.00E+00	0.00E+00	0.00E+00	1.37E-02
Xenon-138	Ci	0.00E+00	0.00E+00	0.00E+00	1.37E-02
Krypton-85	Ci	0.00E+00	0.00E+00	0.00E+00	4.06E-02
Xenon-131m	Ci	0.00E+00	0.00E+00	1.10E-03	5.11E-03
Totals	Ci	0.00E+00	0.00E+00	2.42E-02	7.31E-01

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
LIQUID EFFLUENTS**

Nuclides <u>Released</u>	<u>Units</u>	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>
1. Fission and Activation Products					
Iron-55	Ci	0.00E+00	1.86E-08	0.00E+00	0.00E+00
Manganese-54	Ci	0.00E+00	0.00E+00	3.30E-06	1.06E-03
Cobalt-58	Ci	0.00E+00	0.00E+00	0.00E+00	5.94E-05
Cobalt-60	Ci	0.00E+00	0.00E+00	6.12E-06	8.65E-04
Totals	Ci	0.00E+00	1.86E-08	9.42E-06	1.98E-03
2. Tritium	Ci	1.63E-01	5.17E-01	9.93E-02	5.52E-01
3. Dissolved and Entrained Noble Gases					
Xenon-135	Ci	0.00E+00	0.00E+00	0.00E+00	1.22E-06
Totals	Ci	0.00E+00	0.00E+00	0.00E+00	1.22E-06

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-4
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
LIQUID EFFLUENTS**

Nuclides <u>Released</u>	<u>Units</u>	<u>Continuous Mode</u>		<u>Batch Mode</u>	
		<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
1. Fission and Activation Products					
Silver-110m	Ci	0.00E+00	0.00E+00	0.00E+00	1.59E-05
Manganese-54	Ci	0.00E+00	0.00E+00	3.84E-08	4.45E-04
Cobalt-57	Ci	0.00E+00	0.00E+00	0.00E+00	5.75E-05
Cobalt-58	Ci	0.00E+00	0.00E+00	9.19E-04	7.07E-03
Cobalt-60	Ci	0.00E+00	0.00E+00	1.36E-04	1.17E-03
Cesium-134	Ci	0.00E+00	0.00E+00	4.18E-05	3.12E-03
Cesium-137	Ci	0.00E+00	0.00E+00	1.38E-04	3.78E-03
Iron-55	Ci	0.00E+00	0.00E+00	0.00E+00	5.39E-04
Iodine-131	Ci	0.00E+00	0.00E+00	0.00E+00	2.00E-04
Iodine-133	Ci	0.00E+00	0.00E+00	0.00E+00	3.40E-06
Molybdenum-99	Ci	0.00E+00	0.00E+00	0.00E+00	1.14E-05
Niobium-95	Ci	0.00E+00	0.00E+00	0.00E+00	4.96E-05
Antimony-122	Ci	0.00E+00	0.00E+00	1.76E-08	1.95E-06
Antimony-125	Ci	0.00E+00	0.00E+00	4.58E-05	1.18E-03
Tin-117m	Ci	0.00E+00	0.00E+00	7.89E-05	2.99E-06
Totals	Ci	0.00E+00	0.00E+00	1.36E-03	1.76E-02
2. Tritium	Ci	0.00E+00	0.00E+00	1.14E+02	1.75E+02
3. Dissolved and Entrained Noble Gases					
Xenon-133	Ci	0.00E+00	0.00E+00	3.25E-04	8.23E-04
Totals	Ci	0.00E+00	0.00E+00	3.25E-04	8.23E-04

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-5
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
LIQUID EFFLUENTS**

Nuclides	<u>Continuous Mode</u>			<u>Batch Mode</u>	
	<u>Units</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
<u>Released</u>					
1. Fission and Activation Products					
Manganese-54	Ci	0.00E+00	0.00E+00	2.92E-05	8.07E-04
Cobalt-57	Ci	0.00E+00	0.00E+00	8.87E-06	8.59E-05
Cobalt-58	Ci	0.00E+00	0.00E+00	1.29E-03	1.09E-02
Cobalt-60	Ci	0.00E+00	0.00E+00	2.69E-04	1.49E-03
Cesium-134	Ci	0.00E+00	0.00E+00	3.15E-04	4.75E-03
Cesium-137	Ci	0.00E+00	0.00E+00	3.99E-04	5.02E-03
Chromium-51	Ci	0.00E+00	0.00E+00	0.00E+00	2.34E-04
Iodine-131	Ci	0.00E+00	0.00E+00	0.00E+00	2.79E-04
Iodine-133	Ci	0.00E+00	0.00E+00	0.00E+00	4.52E-05
Antimony-122	Ci	0.00E+00	0.00E+00	0.00E+00	2.89E-05
Tin-117m	Ci	0.00E+00	0.00E+00	6.80E-06	0.00E+00
Antimony-125	Ci	0.00E+00	0.00E+00	2.81E-04	3.22E-04
Strontium-89	Ci	0.00E+00	0.00E+00	0.00E+00	1.70E-05
Strontium-90	Ci	0.00E+00	0.00E+00	0.00E+00	4.34E-06
Niobium-95	Ci	0.00E+00	0.00E+00	2.71E-05	1.49E-04
Totals	Ci	0.00E+00	0.00E+00	2.63E-03	2.41E-02
2. Tritium	Ci	0.00E+00	0.00E+00	2.46E+01	4.02E+01
3. Dissolved and Entrained Noble Gases					
Xenon-133	Ci	0.00E+00	0.00E+00	2.69E-05	6.62E-05
Totals	Ci	0.00E+00	0.00E+00	2.69E-05	6.62E-05

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 2B-6
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
LIQUID EFFLUENTS**

Nuclides		<u>Continuous Mode</u>		<u>Batch Mode</u>		
		<u>Units</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
<u>Released</u>						
1.	Fission and Activation Products					
	Manganese-54	Ci	0.00E+00	0.00E+00	4.62E-05	2.23E-04
	Cobalt-58	Ci	0.00E+00	0.00E+00	1.14E-07	1.29E-05
	Cobalt-60	Ci	0.00E+00	0.00E+00	4.03E-05	1.89E-04
	Technetium-99m	Ci	0.00E+00	0.00E+00	0.00E+00	1.34E-07
	Chromium-51	Ci	0.00E+00	0.00E+00	0.00E+00	1.28E-04
	Cesium-137	Ci	0.00E+00	0.00E+00	1.27E-07	0.00E+00
	Zinc-69m	Ci	0.00E+00	0.00E+00	0.00E+00	7.94E-07
	Totals	Ci	0.00E+00	0.00E+00	8.67E-05	5.54E-04
2.	Tritium	Ci	8.63E-01	7.65E-01	6.16E-01	3.18E-01
3.	Dissolved and Entrained Noble Gases					
	Xenon-133	Ci	0.00E+00	0.00E+00	6.58E-06	0.00E+00
	Xenon-135	Ci	0.00E+00	0.00E+00	1.74E-05	0.00E+00
	Totals	Ci	0.00E+00	0.00E+00	2.40E-05	0.00E+00

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 3A
SALEM GENERATING STATION – UNITS 1 AND 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2002
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
(Not Irradiated Fuel)**

SGS			12-Month	Est. Total
1 A.	Type of Waste (Class A)	Units¹	Period	Error
a.	Spent Resins, Filters, Sludges, Evaporator Bottoms	m ³ Ci	1.17E+01 4.21E+00	25%
b.	Dry Compressible Waste, Contaminated Equipment	m ³ Ci	5.44E+02 1.57E-00	25%
c.	Irradiated Components, Control Rods	m ³ Ci	0.00E+00 0.00E+00	25%
d.	Others – Reverse Osmosis Reject	m ³ Ci	0.00E+00 0.00E+00	25%

1 Volumes are measured, activities are estimated

2A. Estimate of Major Nuclide Composition (>1%) – SGS

Nuclides	Resins		Sludge	
	%	Ci	%	Ci
Tritium	2.65	1.11E-01	0.00	0.00E+00
Iron-55	5.49	2.31E-01	0.00	0.00E+00
Cobalt-58	17.92	7.55E-01	0.00	0.00E+00
Cobalt-60	4.77	2.01E-01	0.00	0.00E+00
Nickel-63	13.29	5.60E-01	0.00	0.00E+00
Cesium-134	25.49	1.07E-01	0.00	0.00E+00
Cesium-137	26.11	1.10E+00	0.00	0.00E+00
Manganese-54	1.44	6.08E-02	0.00	0.00E+00

Nuclides	DAW		RO Reject	
	%	Ci	%	Ci
Tritium	7.27	1.14E-01	0.00	0.00E+00
Iron-55	18.71	2.94E-01	0.00	0.00E+00
Cobalt-58	30.29	4.76E-01	0.00	0.00E+00
Cobalt-60	5.35	8.40E-02	0.00	0.00E+00
Nickel-63	12.77	2.01E-01	0.00	0.00E+00
Niobium-95	1.82	2.86E-02	0.00	0.00E+00
Cesium-134	8.25	1.30E-01	0.00	0.00E+00
Cesium-137	13.77	2.16E-01	0.00	0.00E+00
Manganese-54	1.19	1.87E-02	0.00	0.00E+00

ND = Not Detected

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 3A (Continued)
SALEM GENERATING STATION – UNITS 1 AND 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2002
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

3A. Solid Waste Disposal (Class A or less) – SGS

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>	<u>Type of Containers</u>
2	Truck	Barnwell, SC	HIC
6	Truck	Oak Ridge, TN	Metal
2	Truck	Memphis, TN	Metal

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 3A (Continued)
SALEM GENERATING STATION – UNITS 1 AND 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2002

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

1 B.	SGS Type of Waste (Class B)	Units ¹	12-Month Period	Est. Total Error
a.	Spent Resins, Filters, Sludges, Evaporator Bottoms	m ³ Ci	2.19E+01 1.47E+02	25%
b.	Dry Compressible Waste, Contaminated Equipment	m ³ Ci	0.00E+00 0.00E+00	25%
c.	Irradiated Components, Control Rods	m ³ Ci	0.00E+00 0.00E+00	25%
d.	Others – Reverse Osmosis Reject	m ³ Ci	0.00E+00 0.00E+00	25%

1 Volumes are measured, activities are estimated

2B. Estimate of Major Nuclide Composition (>1%) (Class B) – SGS
Resins

<u>Nuclides</u>	<u>%</u>	<u>Ci</u>
Iron-55	3.34	4.90E+00
Cobalt-60	9.365	1.38E+01
Nickel-63	41.45	6.09E+01
Cesium-134	14.01	2.06E+01
Cesium-137	30.97	4.55E+01

3B. Solid Waste Disposal (Class B) – SGS

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>	<u>Type of Containers</u>
5	Truck	Barnwell, SC	HIC

4. Irradiated Fuel Shipments (Disposition) – SGS

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

5. Solidification Methods – None – SGS

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 3B
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2002**

**SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL**

1 A.	Type of Waste (Class A)	Units¹	12-Month Period	Est. Total Error
a.	Spent Resins, Filters, Sludges, Evaporator Bottoms	m ³ Ci	9.04E+01 5.33E+02	25%
b.	Dry Compressible Waste, Contaminated Equipment	m ³ Ci	2.95E+02 1.61E+00	25%
c.	Irradiated Components, Control Rods	m ³ Ci	0.00E+00 0.00E+00	25%
d.	Others – Reverse Osmosis Reject	m ³ Ci	0.00E+00 0.00E+00	25%

1 Volumes are measured, activities are estimated

**2A. Estimate of Major Nuclide Composition (>1%) (Class A) – HCGS
Resins**

Nuclides	%	Ci
Manganese-54	11.26	6.00E+01
Iron-55	77.27	4.12E+02
Cobalt-60	9.19	4.90E+01
Zinc-65	1.24	6.62E+00

Nuclides	%	DAW Ci
Chromium-51	21.19	3.41E+01
Manganese-54	2.26	3.63E-02
Iron-55	51.12	8.23E+01
Iron-59	14.69	2.37E-01
Cobalt-58	1.83	2.95E-02
Cobalt-60	2.66	4.28E-02
Nickel-63	1.91	3.08E-02
Zinc-65	4.21	6.77E-02

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 3B (Continued)
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2002
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

3A. Solid Waste Disposal (Class A) – HCGS			
<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>	<u>Type of Containers</u>
13	Truck	Barnwell, SC	HIC
2	Truck	Oak Ridge, TN	Metal Box
3	Truck	Memphis, TN	Metal Box

4. Irradiated Fuel Shipments (Disposition) – HCGS

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

5. Solidification Methods – HCGS

No shipments of Solid Radioactive Waste requiring solidification were made during this period.

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4A-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	January 1, 2002 – March 31, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	184	
4. Total time duration for all releases of type listed above:	1.40E+04	Min.
5. Maximum duration for release of type listed above:	1.81E+02	Min.
6. Average duration for release of type listed above:	7.60E+01	Min.
7. Minimum duration for release of type listed above:	4.20E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

BATCH RELEASES ONLY

1. Dates:	April 1, 2002 – June 30, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	165	
4. Total time duration for all releases of type listed above:	1.32E+04	Min.
5. Maximum duration for release of type listed above:	2.37E+02	Min.
6. Average duration for release of type listed above:	8.00E+01	Min.
7. Minimum duration for release of type listed above:	4.50E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4A-1 (Continued)
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

- | | | |
|--|-----------------------------------|------|
| 1. Dates: | July 1, 2002 - September 30, 2002 | |
| 2. Type of release: | Gaseous | |
| 3. Number of releases during quarter: | 158 | |
| 4. Total time duration for all releases of type listed above: | 1.12E+04 | Min. |
| 5. Maximum duration for release of type listed above: | 1.63E+02 | Min. |
| 6. Average duration for release of type listed above: | 7.09E+01 | Min. |
| 7. Minimum duration for release of type listed above: | 3.30E+01 | Min. |
| 8. Average stream flow (dilution flow) during period of release: | N/A | |

BATCH RELEASES ONLY

- | | | |
|--|-------------------------------------|------|
| 1. Dates: | October 1, 2002 - December 31, 2002 | |
| 2. Type of release: | Gaseous | |
| 3. Number of releases during quarter: | 215 | |
| 4. Total time duration for all releases of type listed above: | 2.22E+04 | Min. |
| 5. Maximum duration for release of type listed above: | 1.35E+03 | Min. |
| 6. Average duration for release of type listed above: | 1.03E+02 | Min. |
| 7. Minimum duration for release of type listed above: | 6.20E-01 | Min. |
| 8. Average stream flow (dilution flow) during period of release: | N/A | |

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4A-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	January 1, 2002 – March 31, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	114	
4. Total time duration for all releases of type listed above:	8.09E+03	Min.
5. Maximum duration for release of type listed above:	1.48E+02	Min.
6. Average duration for release of type listed above:	7.10E+01	Min.
7. Minimum duration for release of type listed above:	3.50E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

BATCH RELEASES ONLY

1. Dates:	April 1, 2002 – June 30, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	101	
4. Total time duration for all releases of type listed above:	2.42E+04	Min.
5. Maximum duration for release of type listed above:	1.68E+03	Min.
6. Average duration for release of type listed above:	2.39E+02	Min.
7. Minimum duration for release of type listed above:	3.10E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4A-2 (Continued)
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	July 1, 2002 - September 30, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	102	
4. Total time duration for all releases of type listed above:	6.71E+03	Min.
5. Maximum duration for release of type listed above:	1.77E+02	Min.
6. Average duration for release of type listed above:	6.58E+01	Min.
7. Minimum duration for release of type listed above:	3.10E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

BATCH RELEASES ONLY

1. Dates:	October 1, 2002 - December 31, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	185	
4. Total time duration for all releases of type listed above:	1.45E+04	Min.
5. Maximum duration for release of type listed above:	1.90E+02	Min.
6. Average duration for release of type listed above:	7.85E+01	Min.
7. Minimum duration for release of type listed above:	2.10E+01	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 4A-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE**

BATCH RELEASES ONLY

1. Dates:	January 1, 2002 – March 31, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	0	
4. Total time duration for all releases of type listed above:	0.00E+00	Min.
5. Maximum duration for release of type listed above:	0.00E+00	Min.
6. Average duration for release of type listed above:	0.00E+00	Min.
7. Minimum duration for release of type listed above:	0.00E+00	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

BATCH RELEASES ONLY

1. Dates:	April 1, 2002– June 30, 2002	
2. Type of release:	Gaseous	
3. Number of releases during quarter:	0	
4. Total time duration for all releases of type listed above:	0.00E+00	Min.
5. Maximum duration for release of type listed above:	0.00E+00	Min.
6. Average duration for release of type listed above:	0.00E+00	Min.
7. Minimum duration for release of type listed above:	0.00E+00	Min.
8. Average stream flow (dilution flow) during period of release:	N/A	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4A-3 (Continued)
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

- | | |
|--|----------------------------------|
| 1. Dates: | July 1, 2002- September 30, 2002 |
| 2. Type of release: | Gaseous |
| 3. Number of releases during quarter: | 0 |
| 4. Total time duration for all releases of type listed above: | 0.00E+00 Min. |
| 5. Maximum duration for release of type listed above: | 0.00E+00 Min. |
| 6. Average duration for release of type listed above: | 0.00E+00 Min. |
| 7. Minimum duration for release of type listed above: | 0.00E+00 Min. |
| 8. Average stream flow (dilution flow) during period of release: | N/A |

BATCH RELEASES ONLY

- | | |
|--|------------------------------------|
| 1. Dates: | October 1, 2002- December 31, 2002 |
| 2. Type of release: | Gaseous |
| 3. Number of releases during quarter: | 0 |
| 4. Total time duration for all releases of type listed above: | 0.00E+00 Min. |
| 5. Maximum duration for release of type listed above: | 0.00E+00 Min. |
| 6. Average duration for release of type listed above: | 0.00E+00 Min. |
| 7. Minimum duration for release of type listed above: | 0.00E+00 Min. |
| 8. Average stream flow (dilution flow) during period of release: | N/A |

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4B-1
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	January 1, 2002 – March 31, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	26	
4. Total time duration for all releases of type listed above:	6.69E+03	Min.
5. Maximum duration for release of type listed above:	4.05E+02	Min.
6. Average duration for release of type listed above:	2.57E+02	Min.
7. Minimum duration for release of type listed above:	5.00E-02	Min.
8. Average stream flow (dilution flow) during period of release:	1.78E+07	GPM

BATCH RELEASES ONLY

1. Dates:	April 1, 2002 – June 30, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	24	
4. Total time duration for all releases of type listed above:	6.13E+03	Min.
5. Maximum duration for release of type listed above:	4.22E+02	Min.
6. Average duration for release of type listed above:	2.55E+02	Min.
7. Minimum duration for release of type listed above:	1.44E+02	Min.
8. Average stream flow (dilution flow) during period of release:	2.17E+07	GPM

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4B-1 (Continued)
SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	July 1, 2002 – September 30, 2002		
2. Type of release:	Liquid		
3. Number of releases during quarter:	15		
4. Total time duration for all releases of type listed above:	3.51E+03	Min.	
5. Maximum duration for release of type listed above:	3.67E+02	Min.	
6. Average duration for release of type listed above:	2.34E+02	Min.	
7. Minimum duration for release of type listed above:	5.00E+00	Min.	
8. Average stream flow (dilution flow) during period of release:	3.97E+07	GPM	

BATCH RELEASES ONLY

1. Dates:	October 1, 2002 – December 31, 2002		
2. Type of release:	Liquid		
3. Number of releases during quarter:	24		
4. Total time duration for all releases of type listed above:	4.73E+03	Min.	
5. Maximum duration for release of type listed above:	5.57E+02	Min.	
6. Average duration for release of type listed above:	1.97E+02	Min.	
7. Minimum duration for release of type listed above:	5.00E+00	Min.	
8. Average stream flow (dilution flow) during period of release:	2.15E+07	GPM	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 4B-2
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY - JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE**

BATCH RELEASES ONLY

1. Dates:	January 1, 2002 - March 31, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	12	
4. Total time duration for all releases of type listed above:	3.49E+03	Min.
5. Maximum duration for release of type listed above:	3.94E+02	Min.
6. Average duration for release of type listed above:	2.91E+02	Min.
7. Minimum duration for release of type listed above:	1.98E+02	Min.
8. Average stream flow (dilution flow) during period of release:	1.09E+08	GPM

BATCH RELEASES ONLY

1. Dates:	April 1, 2002 - June 30, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	39	
4. Total time duration for all releases of type listed above:	7.39E+03	Min.
5. Maximum duration for release of type listed above:	1.42E+03	Min.
6. Average duration for release of type listed above:	1.89E+02	Min.
7. Minimum duration for release of type listed above:	5.00E-02	Min.
8. Average stream flow (dilution flow) during period of release:	1.17E+07	GPM

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4B-2 (Continued)
SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY - DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	July 1, 2002 - September 30, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	7	
4. Total time duration for all releases of type listed above:	1.80E+03	Min.
5. Maximum duration for release of type listed above:	3.45E+02	Min.
6. Average duration for release of type listed above:	2.57E+02	Min.
7. Minimum duration for release of type listed above:	1.72E+02	Min.
8. Average stream flow (dilution flow) during period of release:	3.16E+08	GPM

BATCH RELEASES ONLY

1. Dates:	October 1, 2002 - December 31, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	5	
4. Total time duration for all releases of type listed above:	1.20E+03	Min.
5. Maximum duration for release of type listed above:	3.13E+02	Min.
6. Average duration for release of type listed above:	2.40E+02	Min.
7. Minimum duration for release of type listed above:	1.93E+02	Min.
8. Average stream flow (dilution flow) during period of release:	1.01E+08	GPM

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

**TABLE 4B-3
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – JUNE 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE**

BATCH RELEASES ONLY

1. Dates:	January 1, 2002– March 31, 2002		
2. Type of release:	Liquid		
3. Number of releases during quarter:	11		
4. Total time duration for all releases of type listed above:	4.78E+02	Min.	
5. Maximum duration for release of type listed above:	6.00E+01	Min.	
6. Average duration for release of type listed above:	4.34E+01	Min.	
7. Minimum duration for release of type listed above:	2.50E+01	Min.	
8. Average stream flow (dilution flow) during period of release:	5.92E+06	GPM	

BATCH RELEASES ONLY

1. Dates:	April 1, 2002– June 30, 2002		
2. Type of release:	Liquid		
3. Number of releases during quarter:	11		
4. Total time duration for all releases of type listed above:	7.60E+02	Min.	
5. Maximum duration for release of type listed above:	9.54E+01	Min.	
6. Average duration for release of type listed above:	6.91E+01	Min.	
7. Minimum duration for release of type listed above:	2.95E+01	Min.	
8. Average stream flow (dilution flow) during period of release:	4.94E+06	GPM	

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

TABLE 4B-3 (Continued)
HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JULY – DECEMBER 2002
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates:	July 1, 2002– September 30, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	13	
4. Total time duration for all releases of type listed above:	7.79E+02	Min.
5. Maximum duration for release of type listed above:	8.98E+01	Min.
6. Average duration for release of type listed above:	5.99E+01	Min.
7. Minimum duration for release of type listed above:	3.00E+01	Min.
8. Average stream flow (dilution flow) during period of release:	6.11E+06	GPM

BATCH RELEASES ONLY

1. Dates:	October 1, 2002– December 31, 2002	
2. Type of release:	Liquid	
3. Number of releases during quarter:	9	
4. Total time duration for all releases of type listed above:	3.93+02	Min.
5. Maximum duration for release of type listed above:	8.54E+01	Min.
6. Average duration for release of type listed above:	4.36E+01	Min.
7. Minimum duration for release of type listed above:	2.70E+01	Min.
8. Average stream flow (dilution flow) during period of release:	8.89E+06	GPM

Lapse Rate Wind Distributions 300-33 Foot

7/02 - 12/02

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	6	0.2	14	0.4	4	0.1	0	0.0	0	0.0	24	0.7
NNE	0	0.0	0	0.0	2	0.1	2	0.1	0	0.0	0	0.0	0	0.0	4	0.1
NE	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
SE	0	0.0	0	0.0	2	0.1	6	0.2	10	0.3	0	0.0	0	0.0	2	0.1
SSE	0	0.0	1	0.0	8	0.2	8	0.2	5	0.1	0	0.0	0	0.0	18	0.5
S	0	0.0	0	0.0	14	0.4	2	0.1	0	0.0	0	0.0	0	0.0	22	0.6
SSW	0	0.0	0	0.0	9	0.3	2	0.1	0	0.0	0	0.0	0	0.0	16	0.4
SW	0	0.0	1	0.0	5	0.1	2	0.1	3	0.1	0	0.0	0	0.0	11	0.3
WSW	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	11	0.3
W	0	0.0	0	0.0	1	0.0	4	0.1	0	0.0	0	0.0	0	0.0	2	0.1
WNW	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	5	0.1
NW	0	0.0	0	0.0	2	0.1	0	0.0	2	0.1	2	0.1	0	0.0	2	0.1
NNW	0	0.0	0	0.0	8	0.2	2	0.1	2	0.1	0	0.0	0	0.0	6	0.2
															12	0.3
	0	0.0	2	0.1	58	1.6	50	1.4	26	0.7	2	0.1	0	0.0	138	3.8

MEAN WIND SPEED: 9.0

MISSING: 2

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	1	0.0	14	0.4	14	0.4	3	0.1	0	0.0	0	0.0	32	0.9
NNE	0	0.0	0	0.0	4	0.1	7	0.2	0	0.0	0	0.0	0	0.0	11	0.3
NE	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1
ENE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	0	0.0	3	0.1
ESE	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	1	0.0	4	0.1	5	0.1	0	0.0	0	0.0	1	0.0
SSE	0	0.0	0	0.0	4	0.1	0	0.0	2	0.1	0	0.0	0	0.0	10	0.3
S	0	0.0	0	0.0	6	0.2	3	0.1	0	0.0	0	0.0	0	0.0	6	0.2
SSW	0	0.0	0	0.0	2	0.1	1	0.0	0	0.0	0	0.0	0	0.0	9	0.3
SW	0	0.0	0	0.0	2	0.1	1	0.0	3	0.1	0	0.0	0	0.0	3	0.1
WSW	0	0.0	0	0.0	1	0.0	3	0.1	1	0.0	0	0.0	0	0.0	6	0.2
W	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
WNW	0	0.0	0	0.0	3	0.1	3	0.1	4	0.1	0	0.0	0	0.0	3	0.1
NW	0	0.0	0	0.0	2	0.1	0	0.0	5	0.1	0	0.0	0	0.0	10	0.3
NNW	0	0.0	0	0.0	9	0.3	11	0.3	1	0.0	0	0.0	0	0.0	7	0.2
															21	0.6
	0	0.0	1	0.0	52	1.4	51	1.4	24	0.7	0	0.0	0	0.0	128	3.6

MEAN WIND SPEED: 9.1
MISSING: 4

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	1	0.0	4	0.1	6	0.2	1	0.0	0	0.0	0	0.0	12	0.3
NNE	0	0.0	0	0.0	4	0.1	3	0.1	2	0.1	0	0.0	0	0.0	9	0.3
NE	0	0.0	0	0.0	2	0.1	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
ENE	0	0.0	0	0.0	3	0.1	1	0.0	0	0.0	0	0.0	0	0.0	4	0.1
E	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
ESE	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	0	0.0	3	0.1	8	0.2	0	0.0	0	0.0	11	0.3
SSE	0	0.0	1	0.0	2	0.1	0	0.0	3	0.1	0	0.0	0	0.0	6	0.2
S	0	0.0	0	0.0	4	0.1	2	0.1	0	0.0	0	0.0	0	0.0	6	0.2
SSW	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SW	0	0.0	0	0.0	3	0.1	7	0.2	1	0.0	0	0.0	0	0.0	11	0.3
WSW	0	0.0	0	0.0	5	0.1	5	0.1	0	0.0	0	0.0	0	0.0	10	0.3
W	0	0.0	0	0.0	1	0.0	6	0.2	1	0.0	0	0.0	0	0.0	8	0.2
WNW	0	0.0	0	0.0	3	0.1	2	0.1	0	0.0	1	0.0	0	0.0	6	0.2
NW	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	1	0.0	0	0.0	4	0.1
NNW	0	0.0	0	0.0	4	0.1	3	0.1	0	0.0	0	0.0	0	0.0	7	0.2
	0	0.0	2	0.1	37	1.0	43	1.2	17	0.5	2	0.1	0	0.0	101	2.8

MEAN WIND SPEED: 9.3

MISSING: 11

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

DIRECTION		WIND SPEED GROUPS (MPH)														SUM PERCENT	
		0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6			
		SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	28	0.8	76	2.1	19	0.5	4	0.1	0	0.0	127	3.5	
NNE	0	0.0	1	0.0	35	1.0	59	1.6	32	0.9	0	0.0	0	0.0	127	3.5	
NE	0	0.0	5	0.1	40	1.1	79	2.2	30	0.8	0	0.0	0	0.0	154	4.3	
ENE	0	0.0	7	0.2	17	0.5	25	0.7	6	0.2	0	0.0	0	0.0	55	1.5	
E	0	0.0	3	0.1	16	0.4	18	0.5	0	0.0	0	0.0	0	0.0	37	1.0	
ESE	0	0.0	2	0.1	15	0.4	19	0.5	0	0.0	0	0.0	0	0.0	36	1.0	
SE	0	0.0	1	0.0	6	0.2	34	0.9	38	1.1	3	0.1	0	0.0	82	2.3	
SSE	0	0.0	2	0.1	20	0.6	40	1.1	39	1.1	2	0.1	0	0.0	103	2.9	
S	0	0.0	1	0.0	27	0.8	64	1.8	15	0.4	2	0.1	0	0.0	109	3.0	
SSW	0	0.0	2	0.1	22	0.6	37	1.0	16	0.4	1	0.0	0	0.0	78	2.2	
SW	0	0.0	1	0.0	20	0.6	33	0.9	5	0.1	0	0.0	0	0.0	59	1.6	
WSW	0	0.0	2	0.1	18	0.5	19	0.5	2	0.1	0	0.0	0	0.0	41	1.1	
W	0	0.0	1	0.0	17	0.5	27	0.8	10	0.3	0	0.0	0	0.0	55	1.5	
WNW	0	0.0	3	0.1	22	0.6	37	1.0	20	0.6	0	0.0	0	0.0	82	2.3	
NW	0	0.0	3	0.1	20	0.6	46	1.3	18	0.5	2	0.1	1	0.0	90	2.5	
NNW	0	0.0	3	0.1	16	0.4	24	0.7	9	0.3	11	0.3	0	0.0	63	1.8	
		0	0.0	37	1.0	339	9.4	637	17.7	259	7.2	25	0.7	1	0.0	1298	36.2

MEAN WIND SPEED: 9.8
MISSING: 58

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	11	0.3	63	1.8	39	1.1	3	0.1	1	0.0	0	0.0	117	3.3
NNE	0	0.0	7	0.2	62	1.7	43	1.2	6	0.2	0	0.0	0	0.0	118	3.3
NF	0	0.0	14	0.4	62	1.7	26	0.7	6	0.2	0	0.0	0	0.0	108	3.0
ENE	0	0.0	11	0.3	33	0.9	7	0.2	0	0.0	0	0.0	0	0.0	51	1.4
E	0	0.0	14	0.4	36	1.0	4	0.1	0	0.0	0	0.0	0	0.0	54	1.5
ESE	0	0.0	5	0.1	30	0.8	19	0.5	0	0.0	0	0.0	0	0.0	54	1.5
SE	0	0.0	6	0.2	13	0.4	32	0.9	12	0.3	0	0.0	0	0.0	63	1.8
SSE	0	0.0	5	0.1	23	0.6	38	1.1	10	0.3	0	0.0	0	0.0	76	2.1
S	0	0.0	2	0.1	28	0.8	29	0.8	8	0.2	0	0.0	0	0.0	67	1.9
SSW	0	0.0	4	0.1	40	1.1	44	1.2	6	0.2	0	0.0	0	0.0	94	2.6
SW	0	0.0	1	0.0	66	1.8	39	1.1	2	0.1	0	0.0	0	0.0	108	3.0
WSW	0	0.0	6	0.2	51	1.4	27	0.8	1	0.0	0	0.0	0	0.0	85	2.4
W	0	0.0	5	0.1	26	0.7	28	0.8	8	0.2	0	0.0	0	0.0	67	1.9
WNW	0	0.0	7	0.2	49	1.4	38	1.1	2	0.1	0	0.0	0	0.0	96	2.7
NW	0	0.0	4	0.1	50	1.4	40	1.1	10	0.3	6	0.2	0	0.0	110	3.1
NNW	0	0.0	9	0.3	48	1.3	38	1.1	10	0.3	0	0.0	0	0.0	105	2.9
	0	0.0	111	3.1	680	18.9	491	13.7	84	2.3	7	0.2	0	0.0	1373	38.3

MEAN WIND SPEED: 7.4

MISSING: 72

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
 BY ATMOSPHERIC STABILITY CLASS
 WIND: 30 FT
 DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
 CLASS F

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	35	1.0	17	0.5	0	0.0	0	0.0	0	0.0	52	1.4
NNE	0	0.0	4	0.1	60	1.7	10	0.3	0	0.0	0	0.0	0	0.0	74	2.1
NE	0	0.0	9	0.3	34	0.9	5	0.1	0	0.0	0	0.0	0	0.0	48	1.3
ENE	0	0.0	6	0.2	15	0.4	0	0.0	0	0.0	0	0.0	0	0.0	21	0.6
E	0	0.0	6	0.2	15	0.4	0	0.0	0	0.0	0	0.0	0	0.0	21	0.6
ESE	0	0.0	2	0.1	14	0.4	1	0.0	0	0.0	0	0.0	0	0.0	17	0.5
SE	0	0.0	1	0.0	10	0.3	10	0.3	6	0.2	0	0.0	0	0.0	27	0.8
SSE	0	0.0	2	0.1	9	0.3	6	0.2	1	0.0	0	0.0	0	0.0	18	0.5
S	0	0.0	3	0.1	4	0.1	6	0.2	10	0.3	0	0.0	0	0.0	23	0.6
SSW	0	0.0	2	0.1	10	0.3	9	0.3	1	0.0	0	0.0	0	0.0	22	0.6
SW	0	0.0	1	0.0	21	0.6	6	0.2	0	0.0	0	0.0	0	0.0	28	0.8
WSW	0	0.0	0	0.0	27	0.8	7	0.2	0	0.0	0	0.0	0	0.0	34	0.9
W	0	0.0	3	0.1	11	0.3	0	0.0	0	0.0	0	0.0	0	0.0	14	0.4
WNW	0	0.0	4	0.1	8	0.2	2	0.1	0	0.0	0	0.0	0	0.0	14	0.4
NW	0	0.0	3	0.1	16	0.4	3	0.1	0	0.0	0	0.0	0	0.0	22	0.6
NNW	0	0.0	2	0.1	26	0.7	12	0.3	1	0.0	0	0.0	0	0.0	41	1.1
	0	0.0	48	1.3	315	8.8	94	2.6	19	0.5	0	0.0	0	0.0	476	13.3

MEAN WIND SPEED: 6.5
 MISSING: 10

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1
NNE	0	0.0	0	0.0	5	0.1	0	0.0	0	0.0	0	0.0	0	0.0	5	0.1
NE	0	0.0	0	0.0	6	0.2	1	0.0	0	0.0	0	0.0	0	0.0	7	0.2
ENE	0	0.0	2	0.1	6	0.2	0	0.0	0	0.0	0	0.0	0	0.0	8	0.2
E	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	2	0.1	7	0.2	1	0.0	0	0.0	0	0.0	0	0.0	10	0.3
SE	0	0.0	0	0.0	5	0.1	8	0.2	6	0.2	0	0.0	0	0.0	19	0.5
SSE	0	0.0	2	0.1	2	0.1	5	0.1	4	0.1	0	0.0	0	0.0	13	0.4
S	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	2	0.1
SSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SW	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
WSW	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
W	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
NW	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NNW	0	0.0	1	0.0	2	0.1	1	0.0	1	0.0	0	0.0	0	0.0	5	0.1
	0	0.0	11	0.3	36	1.0	16	0.4	12	0.3	0	0.0	0	0.0	75	2.1

MEAN WIND SPEED: 7.3

MISSING: 0

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	13	0.4	152	4.2	166	4.6	30	0.8	5	0.1	0	0.0	366	10.2
NNE	0	0.0	12	0.3	172	4.8	124	3.5	40	1.1	0	0.0	0	0.0	348	9.7
NE	0	0.0	28	0.8	146	4.1	112	3.1	36	1.0	0	0.0	0	0.0	322	9.0
ENE	0	0.0	26	0.7	74	2.1	34	0.9	6	0.2	0	0.0	0	0.0	140	3.9
E	0	0.0	23	0.6	69	1.9	29	0.8	0	0.0	0	0.0	0	0.0	121	3.4
ESE	0	0.0	11	0.3	69	1.9	41	1.1	0	0.0	0	0.0	0	0.0	121	3.4
SE	0	0.0	8	0.2	37	1.0	97	2.7	85	2.4	3	0.1	0	0.0	230	6.4
SSE	0	0.0	13	0.4	68	1.9	97	2.7	64	1.8	2	0.1	0	0.0	244	6.8
S	0	0.0	7	0.2	83	2.3	106	3.0	34	0.9	2	0.1	0	0.0	232	6.5
SSW	0	0.0	8	0.2	83	2.3	94	2.6	23	0.6	1	0.0	0	0.0	209	5.8
SW	0	0.0	5	0.1	117	3.3	88	2.5	14	0.4	0	0.0	0	0.0	224	6.2
WSW	0	0.0	9	0.3	102	2.8	61	1.7	4	0.1	0	0.0	0	0.0	176	4.9
W	0	0.0	9	0.3	56	1.6	68	1.9	19	0.5	0	0.0	0	0.0	152	4.2
WNW	0	0.0	14	0.4	85	2.4	84	2.3	26	0.7	1	0.0	0	0.0	210	5.9
NW	0	0.0	11	0.3	91	2.5	90	2.5	36	1.0	11	0.3	1	0.0	240	6.7
NNW	0	0.0	15	0.4	113	3.1	91	2.5	24	0.7	11	0.3	0	0.0	254	7.1
	0	0.0	212	5.9	1517	42.3	1382	38.5	441	12.3	36	1.0	1	0.0	3589	100.0

MISSING HOURS: 827

MEAN WIND SPEED: 8.3

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

WIND SPEED GROUPS (MPH)

		0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N		0	0.0	13	0.3	156	4.2	166	4.4	30	0.8	5	0.1	0	0.0	370	9.9
NNE		0	0.0	14	0.4	172	4.6	124	3.3	40	1.1	0	0.0	0	0.0	350	9.3
NE		0	0.0	28	0.7	149	4.0	112	3.0	36	1.0	0	0.0	0	0.0	325	8.7
ENE		0	0.0	29	0.8	74	2.0	36	1.0	8	0.2	0	0.0	0	0.0	147	3.9
E		0	0.0	23	0.6	69	1.8	32	0.9	3	0.1	0	0.0	0	0.0	127	3.4
ESE		0	0.0	12	0.3	69	1.8	41	1.1	0	0.0	0	0.0	0	0.0	122	3.3
SE		0	0.0	8	0.2	40	1.1	112	3.0	94	2.5	4	0.1	0	0.0	258	6.9
SSE		0	0.0	14	0.4	77	2.1	111	3.0	65	1.7	2	0.1	0	0.0	269	7.2
S		0	0.0	7	0.2	92	2.5	106	2.8	34	0.9	2	0.1	0	0.0	241	6.4
SSW		0	0.0	8	0.2	97	2.6	98	2.6	23	0.6	1	0.0	0	0.0	227	6.1
SW		0	0.0	5	0.1	125	3.3	93	2.5	14	0.4	0	0.0	0	0.0	237	6.3
WSW		0	0.0	10	0.3	109	2.9	71	1.9	6	0.2	0	0.0	0	0.0	196	5.2
W		0	0.0	9	0.2	58	1.5	71	1.9	21	0.6	0	0.0	0	0.0	159	4.2
WNW		0	0.0	15	0.4	89	2.4	88	2.3	26	0.7	1	0.0	0	0.0	219	5.8
NW		0	0.0	11	0.3	94	2.5	93	2.5	36	1.0	11	0.3	1	0.0	246	6.6
NNW		0	0.0	15	0.4	115	3.1	92	2.5	24	0.6	11	0.3	0	0.0	257	6.9
		0	0.0	221	5.9	1585	42.3	1446	38.6	460	12.3	37	1.0	1	0.0	3750	100.0
MISSING HOURS:																666	
MEAN WIND SPEED:		8.3															

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 150 FT
DELTA T: (300-33FT)LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	2	0.1	3	0.1	0	0.0	0	0.0	5	0.1
NNE	0	0.0	0	0.0	5	0.1	1	0.0	0	0.0	0	0.0	0	0.0	6	0.2
NE	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
ESE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	1	0.0	1	0.0	2	0.1	3	0.1	0	0.0	0	0.0	7	0.2
SSE	0	0.0	0	0.0	4	0.1	3	0.1	6	0.2	6	0.2	0	0.0	19	0.6
S	0	0.0	1	0.0	11	0.3	2	0.1	2	0.1	0	0.0	0	0.0	16	0.5
SSW	0	0.0	0	0.0	7	0.2	2	0.1	0	0.0	0	0.0	0	0.0	9	0.3
SW	0	0.0	0	0.0	6	0.2	4	0.1	0	0.0	1	0.0	0	0.0	11	0.3
WSW	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	2	0.1	0	0.0	6	0.2
W	0	0.0	1	0.0	0	0.0	1	0.0	4	0.1	0	0.0	0	0.0	6	0.2
WNW	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
NW	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	2	0.1	3	0.1	7	0.2
NNW	0	0.0	0	0.0	5	0.1	3	0.1	5	0.1	0	0.0	1	0.0	14	0.4
	0	0.0	3	0.1	41	1.2	31	0.9	23	0.7	11	0.3	4	0.1	113	3.3

MEAN WIND SPEED: 10.6
MISSING: 27

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 150 FT
DELTA T: (300-33FT)LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	2	0.1	5	0.1	3	0.1	0	0.0	0	0.0	10	0.3
NNE	0	0.0	0	0.0	9	0.3	7	0.2	0	0.0	0	0.0	0	0.0	16	0.5
NE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.1
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	1	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	4	0.1
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	2	0.1
SSE	0	0.0	0	0.0	3	0.1	1	0.0	5	0.1	3	0.1	0	0.0	12	0.4
S	0	0.0	0	0.0	3	0.1	2	0.1	0	0.0	0	0.0	0	0.0	5	0.1
SSW	0	0.0	0	0.0	4	0.1	1	0.0	0	0.0	0	0.0	0	0.0	5	0.1
SW	0	0.0	0	0.0	2	0.1	3	0.1	0	0.0	2	0.1	0	0.0	7	0.2
WSW	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0	1	0.0	0	0.0	3	0.1
W	0	0.0	0	0.0	0	0.0	4	0.1	2	0.1	0	0.0	0	0.0	6	0.2
WNW	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	2	0.1	1	0.0	5	0.1
NW	0	0.0	0	0.0	3	0.1	1	0.0	5	0.1	2	0.1	1	0.0	12	0.4
NNW	0	0.0	1	0.0	2	0.1	6	0.2	9	0.3	0	0.0	0	0.0	18	0.5
	0	0.0	2	0.1	30	0.9	36	1.1	27	0.8	10	0.3	2	0.1	107	3.1

MEAN WIND SPEED: 11.2
MISSING: 25

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 150 FT
DELTA T: (300-33FT)LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	1	0.0	0	0.0	3	0.1	1	0.0	0	0.0	0	0.0	5	0.1
NNE	0	0.0	0	0.0	4	0.1	6	0.2	1	0.0	0	0.0	0	0.0	11	0.3
NE	0	0.0	0	0.0	1	0.0	5	0.1	0	0.0	0	0.0	0	0.0	6	0.2
ENE	0	0.0	0	0.0	3	0.1	2	0.1	0	0.0	0	0.0	0	0.0	5	0.1
E	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	3	0.1
SSE	0	0.0	1	0.0	0	0.0	1	0.0	4	0.1	6	0.2	0	0.0	12	0.4
S	0	0.0	0	0.0	4	0.1	1	0.0	0	0.0	0	0.0	0	0.0	5	0.1
SSW	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	0	0.0	3	0.1
SW	0	0.0	0	0.0	2	0.1	5	0.1	2	0.1	0	0.0	0	0.0	9	0.3
WSW	0	0.0	0	0.0	2	0.1	6	0.2	1	0.0	1	0.0	0	0.0	10	0.3
W	0	0.0	0	0.0	2	0.1	2	0.1	5	0.1	0	0.0	0	0.0	9	0.3
WNW	0	0.0	0	0.0	3	0.1	5	0.1	0	0.0	0	0.0	1	0.0	9	0.3
NW	0	0.0	0	0.0	1	0.0	3	0.1	2	0.1	1	0.0	1	0.0	8	0.2
NNW	0	0.0	0	0.0	1	0.0	2	0.1	2	0.1	0	0.0	0	0.0	5	0.1
	0	0.0	3	0.1	24	0.7	44	1.3	19	0.6	10	0.3	2	0.1	102	3.0

MEAN WIND SPEED: 11.3
MISSING: 10

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 150 FT
DELTA T: (300-33FT)LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	9	0.3	18	0.5	19	0.6	5	0.1	11	0.3	65	1.9
NNE	0	0.0	2	0.1	18	0.5	64	1.9	52	1.5	10	0.3	4	0.1	150	4.4
NE	0	0.0	2	0.1	27	0.8	58	1.7	99	2.9	16	0.5	0	0.0	202	5.9
ENE	0	0.0	2	0.1	10	0.3	25	0.7	7	0.2	0	0.0	0	0.0	44	1.3
E	0	0.0	1	0.0	3	0.1	26	0.8	5	0.1	0	0.0	0	0.0	35	1.0
ESE	0	0.0	1	0.0	7	0.2	14	0.4	9	0.3	0	0.0	0	0.0	31	0.9
SE	0	0.0	1	0.0	4	0.1	3	0.1	16	0.5	11	0.3	1	0.0	36	1.1
SSE	0	0.0	0	0.0	13	0.4	22	0.6	44	1.3	32	0.9	4	0.1	115	3.4
S	0	0.0	2	0.1	11	0.3	47	1.4	35	1.0	3	0.1	0	0.0	98	2.9
SSW	0	0.0	0	0.0	16	0.5	46	1.3	15	0.4	11	0.3	3	0.1	91	2.7
SW	0	0.0	0	0.0	13	0.4	16	0.5	23	0.7	3	0.1	0	0.0	55	1.6
WSW	0	0.0	2	0.1	13	0.4	21	0.6	12	0.4	3	0.1	0	0.0	51	1.5
W	0	0.0	2	0.1	12	0.4	23	0.7	15	0.4	4	0.1	0	0.0	56	1.6
WNW	0	0.0	2	0.1	8	0.2	25	0.7	30	0.9	11	0.3	0	0.0	76	2.2
NW	0	0.0	0	0.0	9	0.3	26	0.8	28	0.8	13	0.4	3	0.1	79	2.3
NNW	0	0.0	1	0.0	11	0.3	30	0.9	21	0.6	8	0.2	3	0.1	74	2.2
	0	0.0	21	0.6	184	5.4	464	13.6	430	12.6	130	3.8	29	0.8	1258	36.8

MEAN WIND SPEED: 12.6
MISSING: 98

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 150 FT
DELTA T: (300-33FT)LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	17	0.5	27	0.8	38	1.1	10	0.3	2	0.1	97	2.8
NNE	0	0.0	4	0.1	37	1.1	65	1.9	27	0.8	6	0.2	0	0.0	139	4.1
NE	0	0.0	5	0.1	14	0.4	65	1.9	21	0.6	5	0.1	0	0.0	110	3.2
ENE	0	0.0	3	0.1	20	0.6	15	0.4	5	0.1	0	0.0	0	0.0	43	1.3
E	0	0.0	4	0.1	13	0.4	17	0.5	1	0.0	0	0.0	0	0.0	35	1.0
ESE	0	0.0	1	0.0	12	0.4	15	0.4	7	0.2	0	0.0	0	0.0	35	1.0
SE	0	0.0	2	0.1	5	0.1	15	0.4	27	0.8	1	0.0	1	0.0	51	1.5
SSE	0	0.0	2	0.1	18	0.5	24	0.7	22	0.6	9	0.3	1	0.0	76	2.2
S	0	0.0	4	0.1	13	0.4	29	0.8	13	0.4	4	0.1	0	0.0	63	1.8
SSW	0	0.0	7	0.2	24	0.7	38	1.1	29	0.8	3	0.1	2	0.1	103	3.0
SW	0	0.0	6	0.2	32	0.9	62	1.8	25	0.7	2	0.1	0	0.0	127	3.7
WSW	0	0.0	4	0.1	21	0.6	56	1.6	11	0.3	0	0.0	0	0.0	92	2.7
W	0	0.0	2	0.1	19	0.6	40	1.2	17	0.5	1	0.0	0	0.0	79	2.3
WNW	0	0.0	4	0.1	15	0.4	58	1.7	28	0.8	1	0.0	0	0.0	106	3.1
NW	0	0.0	3	0.1	18	0.5	44	1.3	34	1.0	10	0.3	7	0.2	116	3.4
NNW	0	0.0	1	0.0	5	0.1	28	0.8	31	0.9	6	0.2	0	0.0	71	2.1
	0	0.0	55	1.6	283	8.3	598	17.5	336	9.8	58	1.7	13	0.4	1343	39.3

MEAN WIND SPEED: 10.7
MISSING: 102

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	1	0.0	4	0.1	16	0.5	15	0.4	0	0.0	0	0.0	36	1.1
NNE	0	0.0	2	0.1	16	0.5	33	1.0	6	0.2	0	0.0	0	0.0	57	1.7
NE	0	0.0	1	0.0	10	0.3	23	0.7	7	0.2	0	0.0	0	0.0	41	1.2
ENE	0	0.0	4	0.1	2	0.1	3	0.1	0	0.0	0	0.0	0	0.0	9	0.3
E	0	0.0	3	0.1	11	0.3	3	0.1	0	0.0	0	0.0	0	0.0	17	0.5
ESE	0	0.0	0	0.0	4	0.1	9	0.3	8	0.2	0	0.0	0	0.0	21	0.6
SE	0	0.0	2	0.1	10	0.3	13	0.4	7	0.2	0	0.0	0	0.0	32	0.9
SSE	0	0.0	1	0.0	4	0.1	10	0.3	0	0.0	4	0.1	3	0.1	22	0.6
S	0	0.0	1	0.0	5	0.1	6	0.2	3	0.1	1	0.0	0	0.0	16	0.5
SSW	0	0.0	2	0.1	8	0.2	7	0.2	3	0.1	10	0.3	1	0.0	31	0.9
SW	0	0.0	0	0.0	1	0.0	17	0.5	10	0.3	0	0.0	0	0.0	28	0.8
WSW	0	0.0	0	0.0	3	0.1	22	0.6	8	0.2	0	0.0	0	0.0	33	1.0
W	0	0.0	0	0.0	4	0.1	17	0.5	5	0.1	0	0.0	0	0.0	26	0.8
WNW	0	0.0	0	0.0	4	0.1	4	0.1	1	0.0	0	0.0	0	0.0	9	0.3
NW	0	0.0	2	0.1	4	0.1	8	0.2	1	0.0	0	0.0	0	0.0	15	0.4
NNW	0	0.0	2	0.1	5	0.1	11	0.3	10	0.3	0	0.0	1	0.0	29	0.8
	0	0.0	21	0.6	95	2.8	202	5.9	84	2.5	15	0.4	5	0.1	422	12.3

MEAN WIND SPEED: 10.3

MISSING: 64

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.1
NE	0	0.0	0	0.0	3	0.1	2	0.1	0	0.0	0	0.0	0	0.0	5	0.1
ENE	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
E	0	0.0	2	0.1	1	0.0	3	0.1	0	0.0	0	0.0	0	0.0	6	0.2
ESE	0	0.0	1	0.0	2	0.1	9	0.3	2	0.1	0	0.0	0	0.0	14	0.4
SE	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
SSE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	7	0.2
S	0	0.0	0	0.0	4	0.1	3	0.1	10	0.3	9	0.3	0	0.0	26	0.8
SSW	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	1	0.0	0	0.0	3	0.1
SW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
WSW	0	0.0	0	0.0	0	0.0	0	0.0	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	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	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	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	0.0	1	0.0	0	0.0	1	0.0
									2	0.1	0	0.0	1	0.0	3	0.1
	0	0.0	4	0.1	14	0.4	25	0.7	14	0.4	16	0.5	1	0.0	74	2.2

MEAN WIND SPEED: 12.2
MISSING: 1

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	8	0.2	32	0.9	71	2.1	79	2.3	15	0.4	13	0.4	218	6.4
NNE	0	0.0	8	0.2	90	2.6	177	5.2	86	2.5	16	0.5	4	0.1	381	11.1
NE	0	0.0	8	0.2	56	1.6	154	4.5	127	3.7	21	0.6	0	0.0	366	10.7
ENE	0	0.0	9	0.3	35	1.0	48	1.4	12	0.4	0	0.0	0	0.0	104	3.0
E	0	0.0	11	0.3	28	0.8	56	1.6	6	0.2	0	0.0	0	0.0	101	3.0
ESE	0	0.0	4	0.1	25	0.7	48	1.4	26	0.8	0	0.0	0	0.0	103	3.0
SE	0	0.0	6	0.2	20	0.6	36	1.1	55	1.6	14	0.4	2	0.1	133	3.9
SSE	0	0.0	4	0.1	43	1.3	62	1.8	81	2.4	65	1.9	8	0.2	263	7.7
S	0	0.0	8	0.2	51	1.5	90	2.6	63	1.8	17	0.5	0	0.0	229	6.7
SSW	0	0.0	10	0.3	61	1.8	96	2.8	47	1.4	25	0.7	6	0.2	245	7.2
SW	0	0.0	6	0.2	57	1.7	107	3.1	60	1.8	8	0.2	0	0.0	238	7.0
WSW	0	0.0	6	0.2	41	1.2	109	3.2	33	1.0	7	0.2	0	0.0	196	5.7
W	0	0.0	5	0.1	37	1.1	87	2.5	48	1.4	5	0.1	0	0.0	182	5.3
WNW	0	0.0	6	0.2	30	0.9	96	2.8	60	1.8	14	0.4	2	0.1	208	6.1
NW	0	0.0	5	0.1	36	1.1	83	2.4	70	2.0	29	0.8	15	0.4	238	7.0
NNW	0	0.0	5	0.1	29	0.8	80	2.3	80	2.3	14	0.4	6	0.2	214	6.3
	0	0.0	109	3.2	671	19.6	1400	40.9	933	27.3	250	7.3	56	1.6	3419	100.0

MEAN WIND SPEED: 11.4

MISSING HOURS: 997

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	8	0.2	32	0.9	71	2.0	79	2.2	15	0.4	13	0.4	218	6.1
NNE	0	0.0	9	0.3	94	2.6	177	4.9	86	2.4	16	0.4	4	0.1	386	10.8
NE	0	0.0	9	0.3	61	1.7	154	4.3	127	3.5	21	0.6	0	0.0	372	10.4
ENE	0	0.0	10	0.3	35	1.0	48	1.3	19	0.5	3	0.1	0	0.0	115	3.2
E	0	0.0	11	0.3	28	0.8	56	1.6	6	0.2	0	0.0	0	0.0	101	2.8
ESE	0	0.0	4	0.1	25	0.7	48	1.3	26	0.7	0	0.0	0	0.0	103	2.9
SE	0	0.0	6	0.2	20	0.6	36	1.0	56	1.6	14	0.4	2	0.1	134	3.7
SSE	0	0.0	6	0.2	44	1.2	78	2.2	90	2.5	70	2.0	14	0.4	302	8.4
S	0	0.0	8	0.2	57	1.6	94	2.6	68	1.9	18	0.5	0	0.0	245	6.8
SSW	0	0.0	10	0.3	65	1.8	103	2.9	52	1.5	25	0.7	6	0.2	261	7.3
SW	0	0.0	7	0.2	60	1.7	113	3.2	69	1.9	8	0.2	0	0.0	257	7.2
WSW	0	0.0	7	0.2	41	1.1	111	3.1	41	1.1	13	0.4	0	0.0	213	5.9
W	0	0.0	6	0.2	40	1.1	91	2.5	50	1.4	7	0.2	1	0.0	195	5.4
WNW	0	0.0	7	0.2	31	0.9	100	2.8	64	1.8	14	0.4	2	0.1	218	6.1
NW	0	0.0	5	0.1	37	1.0	84	2.3	74	2.1	29	0.8	15	0.4	244	6.8
NNW	0	0.0	5	0.1	30	0.8	80	2.2	81	2.3	14	0.4	6	0.2	216	6.0
	0	0.0	118	3.3	700	19.6	1444	40.3	988	27.6	267	7.5	63	1.8	3580	100.0
MEAN WIND SPEED: 11.5														MISSING HOURS: 836		

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)																
DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	0	0.0	2	0.1	7	0.2	3	0.1	0	0.0	0	0.0	12	0.3
NNE	0	0.0	0	0.0	0	0.0	0	0.0	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	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	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	4	0.1	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	0.1
SE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SSE	0	0.0	0	0.0	3	0.1	3	0.1	0	0.0	1	0.0	0	0.0	2	0.1
S	0	0.0	0	0.0	6	0.2	3	0.1	12	0.3	5	0.1	0	0.0	23	0.6
SSW	0	0.0	2	0.1	7	0.2	1	0.0	5	0.1	1	0.0	0	0.0	15	0.4
SW	0	0.0	2	0.1	9	0.2	3	0.1	0	0.0	0	0.0	0	0.0	10	0.3
WSW	0	0.0	0	0.0	5	0.1	6	0.2	0	0.0	1	0.0	0	0.0	15	0.4
W	0	0.0	0	0.0	0	0.0	2	0.1	1	0.0	2	0.1	0	0.0	14	0.4
WNW	0	0.0	0	0.0	1	0.0	0	0.0	4	0.1	0	0.0	0	0.0	6	0.2
NW	0	0.0	0	0.0	2	0.1	0	0.0	2	0.1	0	0.0	0	0.0	3	0.1
NNW	0	0.0	0	0.0	9	0.2	7	0.2	0	0.0	1	0.0	0	0.0	7	0.2
									10	0.3	1	0.0	1	0.0	28	0.8
	0	0.0	5	0.1	44	1.2	37	1.0	37	1.0	12	0.3	5	0.1	140	3.8

MEAN WIND SPEED: 11.2
MISSING: 0

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND SPEED GROUPS (MPH)																
DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT					
N	0	0.0	2	0.1	5	0.1	9	0.2	6	0.2	2	0.1	0	0.0	24	0.6
NNE	0	0.0	0	0.0	1	0.0	6	0.2	1	0.0	0	0.0	0	0.0	8	0.2
NE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ENE	0	0.0	1	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	3	0.1
E	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	0	0.0	2	0.1	2	0.1	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	2	0.1	1	0.0	3	0.1	4	0.1	0	0.0	10	0.3
S	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	0	0.0	3	0.1
SSW	0	0.0	2	0.1	2	0.1	3	0.1	0	0.0	1	0.0	0	0.0	6	0.2
SW	0	0.0	0	0.0	2	0.1	4	0.1	2	0.1	3	0.1	0	0.0	7	0.2
WSW	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	0	0.0	0	0.0	4	0.1
W	0	0.0	0	0.0	3	0.1	2	0.1	6	0.2	1	0.0	2	0.1	12	0.3
WNW	0	0.0	0	0.0	1	0.0	13	0.3	11	0.3	0	0.0	0	0.0	31	0.8
NW	0	0.0	0	0.0	7	0.2										
NNW	0	0.0	0	0.0												
	0	0.0	5	0.1	26	0.7	52	1.4	31	0.8	15	0.4	3	0.1	132	3.5

MEAN WIND SPEED: 11.7
MISSING: 0

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	0	0.0	2	0.1	2	0.1	4	0.1	0	0.0	1	0.0	9	0.2
NNE	0	0.0	0	0.0	0	0.0	5	0.1	2	0.1	0	0.0	0	0.0	7	0.2
NE	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	0	0.0	0	0.0	4	0.1
ENE	0	0.0	0	0.0	3	0.1	2	0.1	0	0.0	0	0.0	0	0.0	5	0.1
E	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	4	0.1
SSE	0	0.0	0	0.0	1	0.0	1	0.0	3	0.1	6	0.2	0	0.0	11	0.3
S	0	0.0	1	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	3	0.1
SSW	0	0.0	0	0.0	2	0.1	3	0.1	0	0.0	0	0.0	0	0.0	5	0.1
SW	0	0.0	0	0.0	2	0.1	4	0.1	0	0.0	0	0.0	0	0.0	6	0.2
WSW	0	0.0	0	0.0	3	0.1	4	0.1	4	0.1	1	0.0	0	0.0	12	0.3
W	0	0.0	1	0.0	1	0.0	4	0.1	6	0.2	1	0.0	0	0.0	13	0.3
WNW	0	0.0	0	0.0	2	0.1	5	0.1	2	0.1	0	0.0	1	0.0	10	0.3
NW	0	0.0	0	0.0	1	0.0	3	0.1	2	0.1	1	0.0	1	0.0	8	0.2
NNW	0	0.0	0	0.0	4	0.1	7	0.2	2	0.1	0	0.0	0	0.0	13	0.3
	0	0.0	2	0.1	22	0.6	46	1.2	27	0.7	12	0.3	3	0.1	112	3.0

MEAN WIND SPEED: 12.0
MISSING: 0

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)															
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	
N	0	0.0	0	0.0	14	0.4	25	0.7	35	0.9	21	0.6	8	0.2	103
NNE	0	0.0	1	0.0	13	0.3	30	0.8	60	1.6	35	0.9	1	0.0	140
NE	0	0.0	1	0.0	16	0.4	31	0.8	46	1.2	15	0.4	0	0.0	109
ENE	0	0.0	1	0.0	9	0.2	22	0.6	8	0.2	0	0.0	0	0.0	40
E	0	0.0	0	0.0	6	0.2	20	0.5	3	0.1	0	0.0	0	0.0	29
ESE	0	0.0	0	0.0	2	0.1	12	0.3	13	0.3	6	0.2	0	0.0	33
SE	0	0.0	3	0.1	4	0.1	7	0.2	18	0.5	20	0.5	3	0.1	55
SSE	0	0.0	1	0.0	4	0.1	20	0.5	37	1.0	23	0.6	3	0.1	88
S	0	0.0	1	0.0	12	0.3	28	0.8	51	1.4	13	0.3	1	0.0	106
SSW	0	0.0	4	0.1	13	0.3	43	1.2	33	0.9	12	0.3	3	0.1	108
SW	0	0.0	2	0.1	8	0.2	27	0.7	24	0.6	4	0.1	0	0.0	65
WSW	0	0.0	2	0.1	16	0.4	19	0.5	13	0.3	4	0.1	1	0.0	55
W	0	0.0	5	0.1	11	0.3	34	0.9	28	0.8	16	0.4	2	0.1	96
WNW	0	0.0	1	0.0	13	0.3	31	0.8	33	0.9	23	0.6	5	0.1	106
NW	0	0.0	2	0.1	9	0.2	27	0.7	29	0.8	16	0.4	18	0.5	101
NNW	0	0.0	0	0.0	3	0.1	35	0.9	48	1.3	17	0.5	3	0.1	106
	0	0.0	24	0.6	153	4.1	411	11.0	479	12.9	225	6.0	48	1.3	1340
															36.0

MEAN WIND SPEED: 13.8
MISSING: 16

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)

DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	15	0.4	43	1.2	47	1.3	26	0.7	1	0.0	135	3.6
NNE	0	0.0	0	0.0	10	0.3	22	0.6	46	1.2	7	0.2	0	0.0	85	2.3
NE	0	0.0	2	0.1	5	0.1	27	0.7	23	0.6	6	0.2	2	0.1	65	1.7
ENE	0	0.0	2	0.1	9	0.2	22	0.6	9	0.2	0	0.0	0	0.0	42	1.1
E	0	0.0	2	0.1	5	0.1	18	0.5	6	0.2	0	0.0	0	0.0	31	0.8
ESE	0	0.0	1	0.0	1	0.0	10	0.3	12	0.3	2	0.1	0	0.0	26	0.7
SE	0	0.0	1	0.0	9	0.2	11	0.3	21	0.6	5	0.1	0	0.0	47	1.3
SSE	0	0.0	5	0.1	12	0.3	30	0.8	24	0.6	6	0.2	3	0.1	80	2.1
S	0	0.0	1	0.0	21	0.6	16	0.4	31	0.8	11	0.3	1	0.0	81	2.2
SSW	0	0.0	7	0.2	19	0.5	21	0.6	41	1.1	9	0.2	2	0.1	99	2.7
SW	0	0.0	5	0.1	17	0.5	38	1.0	61	1.6	7	0.2	1	0.0	129	3.5
WSW	0	0.0	6	0.2	12	0.3	46	1.2	70	1.9	5	0.1	0	0.0	139	3.7
W	0	0.0	5	0.1	14	0.4	43	1.2	45	1.2	5	0.1	0	0.0	112	3.0
WNW	0	0.0	2	0.1	14	0.4	34	0.9	46	1.2	6	0.2	4	0.1	106	2.8
NW	0	0.0	2	0.1	18	0.5	37	1.0	53	1.4	31	0.8	13	0.3	154	4.1
NNW	0	0.0	3	0.1	16	0.4	30	0.8	32	0.9	26	0.7	5	0.1	112	3.0
	0	0.0	47	1.3	197	5.3	448	12.0	567	15.2	152	4.1	32	0.9	1443	38.7

MEAN WIND SPEED: 12.8

MISSING: 2

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)															
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	
N	0	0.0	3	0.1	7	0.2	20	0.5	41	1.1	8	0.2	0	0.0	79
NNE	0	0.0	2	0.1	1	0.0	10	0.3	37	1.0	2	0.1	0	0.0	52
NE	0	0.0	2	0.1	1	0.0	3	0.1	17	0.5	3	0.1	0	0.0	26
ENE	0	0.0	5	0.1	2	0.1	3	0.1	1	0.0	0	0.0	0	0.0	11
E	0	0.0	0	0.0	1	0.0	7	0.2	3	0.1	0	0.0	0	0.0	11
ESE	0	0.0	1	0.0	3	0.1	4	0.1	4	0.1	0	0.0	0	0.0	12
SE	0	0.0	3	0.1	6	0.2	5	0.1	14	0.4	0	0.0	0	0.0	28
SSE	0	0.0	3	0.1	9	0.2	10	0.3	2	0.1	0	0.0	3	0.1	27
S	0	0.0	0	0.0	4	0.1	8	0.2	5	0.1	6	0.2	0	0.0	23
SSW	0	0.0	1	0.0	7	0.2	14	0.4	7	0.2	12	0.3	2	0.1	43
SW	0	0.0	1	0.0	4	0.1	4	0.1	12	0.3	2	0.1	0	0.0	23
WSW	0	0.0	0	0.0	0	0.0	2	0.1	20	0.5	2	0.1	0	0.0	24
W	0	0.0	0	0.0	1	0.0	9	0.2	21	0.6	5	0.1	0	0.0	36
WNW	0	0.0	1	0.0	0	0.0	7	0.2	2	0.1	1	0.0	0	0.0	11
NW	0	0.0	2	0.1	4	0.1	7	0.2	12	0.3	4	0.1	1	0.0	30
NNW	0	0.0	2	0.1	10	0.3	12	0.3	19	0.5	6	0.2	0	0.0	49
	0	0.0	26	0.7	60	1.6	125	3.4	217	5.8	51	1.4	6	0.2	485
															13.0

MEAN WIND SPEED: 13.0
MISSING: 1

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0	0	0.0	2	0.1
NNE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.1
NE	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	2	0.1	0	0.0	2	0.1
E	0	0.0	1	0.0	2	0.1	6	0.2	1	0.0	0	0.0	0	0.0	10	0.3
ESE	0	0.0	0	0.0	1	0.0	1	0.0	2	0.1	2	0.1	0	0.0	6	0.2
SE	0	0.0	0	0.0	2	0.1	3	0.1	4	0.1	1	0.0	0	0.0	10	0.3
SSE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
S	0	0.0	0	0.0	0	0.0	2	0.1	8	0.2	14	0.4	3	0.1	27	0.7
SSW	0	0.0	1	0.0	1	0.0	6	0.2	0	0.0	1	0.0	0	0.0	9	0.2
SW	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	2	0.1
WSW	0	0.0	0	0.0	0	0.0	0	0.0	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	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	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	0.0	2	0.1	0	0.0	2	0.1
NNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	2	0.1
	0	0.0	2	0.1	8	0.2	20	0.5	17	0.5	24	0.6	4	0.1	75	2.0

MEAN WIND SPEED: 15.0
MISSING: 0

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	8	0.2	46	1.2	106	2.8	136	3.6	58	1.6	10	0.3	364	9.8
NNE	0	0.0	3	0.1	26	0.7	74	2.0	146	3.9	44	1.2	1	0.0	294	7.9
NE	0	0.0	5	0.1	23	0.6	65	1.7	86	2.3	24	0.6	2	0.1	205	5.5
ENE	0	0.0	9	0.2	23	0.6	51	1.4	18	0.5	2	0.1	0	0.0	103	2.8
E	0	0.0	3	0.1	14	0.4	57	1.5	13	0.3	0	0.0	0	0.0	87	2.3
ESE	0	0.0	3	0.1	7	0.2	28	0.8	31	0.8	10	0.3	0	0.0	79	2.1
SE	0	0.0	7	0.2	21	0.6	29	0.8	60	1.6	30	0.8	3	0.1	150	4.0
SSE	0	0.0	9	0.2	31	0.8	66	1.8	81	2.2	44	1.2	9	0.2	240	6.4
S	0	0.0	3	0.1	44	1.2	60	1.6	101	2.7	45	1.2	5	0.1	258	6.9
SSW	0	0.0	17	0.5	51	1.4	90	2.4	81	2.2	34	0.9	7	0.2	280	7.5
SW	0	0.0	10	0.3	42	1.1	79	2.1	99	2.7	15	0.4	1	0.0	246	6.6
WSW	0	0.0	8	0.2	37	1.0	80	2.1	108	2.9	17	0.5	1	0.0	251	6.7
W	0	0.0	11	0.3	28	0.8	96	2.6	106	2.8	27	0.7	2	0.1	270	7.2
WNW	0	0.0	4	0.1	33	0.9	78	2.1	85	2.3	34	0.9	11	0.3	245	6.6
NW	0	0.0	6	0.2	35	0.9	76	2.0	102	2.7	56	1.5	39	1.0	314	8.4
NNW	0	0.0	5	0.1	49	1.3	104	2.8	122	3.3	51	1.4	10	0.3	341	9.1
	0	0.0	111	3.0	510	13.7	1139	30.6	1375	36.9	491	13.2	101	2.7	3727	100.0

MEAN WIND SPEED: 13.1

MISSING HOURS: 689

ARTIFICIAL ISLAND 7/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

WIND SPEED GROUPS (MPH)															
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	
N	0	0.0	9	0.2	48	1.2	106	2.7	136	3.5	58	1.5	10	0.3	367
NNE	0	0.0	4	0.1	27	0.7	74	1.9	146	3.8	44	1.1	1	0.0	296
NE	0	0.0	6	0.2	26	0.7	65	1.7	86	2.2	24	0.6	2	0.1	209
ENE	0	0.0	9	0.2	23	0.6	51	1.3	26	0.7	4	0.1	0	0.0	113
E	0	0.0	3	0.1	14	0.4	57	1.5	13	0.3	0	0.0	0	0.0	87
ESE	0	0.0	3	0.1	7	0.2	29	0.7	31	0.8	10	0.3	0	0.0	80
SE	0	0.0	9	0.2	21	0.5	29	0.7	60	1.5	31	0.8	3	0.1	153
SSE	0	0.0	9	0.2	32	0.8	80	2.1	86	2.2	44	1.1	11	0.3	262
S	0	0.0	4	0.1	54	1.4	63	1.6	103	2.7	52	1.3	11	0.3	287
SSW	0	0.0	19	0.5	51	1.3	95	2.4	84	2.2	35	0.9	7	0.2	291
SW	0	0.0	11	0.3	44	1.1	81	2.1	115	3.0	18	0.5	1	0.0	270
WSW	0	0.0	9	0.2	39	1.0	80	2.1	117	3.0	27	0.7	1	0.0	273
W	0	0.0	11	0.3	29	0.7	98	2.5	110	2.8	30	0.8	4	0.1	282
WNW	0	0.0	4	0.1	33	0.8	79	2.0	87	2.2	36	0.9	11	0.3	250
NW	0	0.0	6	0.2	36	0.9	77	2.0	104	2.7	58	1.5	39	1.0	320
NNW	0	0.0	5	0.1	53	1.4	104	2.7	122	3.1	51	1.3	11	0.3	346
	0	0.0	121	3.1	537	13.8	1168	30.1	1426	36.7	522	13.4	112	2.9	3886
															100.0

MISSING HOURS: 530

MEAN WIND SPEED: 13.2

APPENDIX A

METEOROLOGICAL DATA

Lapse Rate Wind Distributions 300-33 Foot

1/02 - 6/02

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	0	0.0	10	0.2	12	0.3	1	0.0	0	0.0	0	0.0	23	0.5
NNE	0	0.0	0	0.0	0	0.0	14	0.3	0	0.0	0	0.0	0	0.0	14	0.3
NE	0	0.0	0	0.0	4	0.1	5	0.1	2	0.0	0	0.0	0	0.0	11	0.3
ENE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
E	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	0	0.0	0	0.0	4	0.1
ESE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
SE	0	0.0	0	0.0	5	0.1	10	0.2	9	0.2	8	0.2	0	0.0	32	0.7
SSE	0	0.0	0	0.0	18	0.4	16	0.4	8	0.2	0	0.0	0	0.0	42	1.0
S	0	0.0	0	0.0	16	0.4	5	0.1	2	0.0	0	0.0	0	0.0	23	0.5
SSW	0	0.0	0	0.0	9	0.2	2	0.0	2	0.0	0	0.0	0	0.0	13	0.3
SW	0	0.0	0	0.0	14	0.3	14	0.3	5	0.1	0	0.0	0	0.0	33	0.8
WSW	0	0.0	0	0.0	3	0.1	29	0.7	10	0.2	0	0.0	0	0.0	42	1.0
W	0	0.0	1	0.0	1	0.0	15	0.3	12	0.3	6	0.1	0	0.0	35	0.8
WNW	0	0.0	0	0.0	5	0.1	8	0.2	34	0.8	5	0.1	0	0.0	52	1.2
NW	0	0.0	0	0.0	2	0.0	17	0.4	16	0.4	3	0.1	1	0.0	39	0.9
NNW	0	0.0	0	0.0	9	0.2	20	0.5	9	0.2	0	0.0	0	0.0	38	0.9
	0	0.0	1	0.0	99	2.3	172	4.0	110	2.6	22	0.5	1	0.0	405	9.4

MEAN WIND SPEED: 11.1
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

DIRECTION	WIND SPEED GROUPS (MPH)														SUM PERCENT	
	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6			
	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	7	0.2	11	0.3	0	0.0	0	0.0	0	0.0	18	0.4
NNE	0	0.0	1	0.0	1	0.0	2	0.0	1	0.0	0	0.0	0	0.0	5	0.1
NE	0	0.0	0	0.0	4	0.1	5	0.1	1	0.0	0	0.0	0	0.0	10	0.2
ENE	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
E	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	1	0.0	2	0.0	1	0.0	1	0.0	0	0.0	5	0.1
SSE	0	0.0	1	0.0	4	0.1	2	0.0	5	0.1	0	0.0	0	0.0	12	0.3
S	0	0.0	0	0.0	8	0.2	1	0.0	0	0.0	0	0.0	0	0.0	9	0.2
SSW	0	0.0	0	0.0	6	0.1	2	0.0	1	0.0	0	0.0	0	0.0	9	0.2
SW	0	0.0	0	0.0	11	0.3	3	0.1	1	0.0	0	0.0	0	0.0	15	0.3
WSW	0	0.0	0	0.0	4	0.1	20	0.5	2	0.0	1	0.0	0	0.0	27	0.6
W	0	0.0	0	0.0	3	0.1	13	0.3	5	0.1	0	0.0	0	0.0	21	0.5
WNW	0	0.0	0	0.0	2	0.0	7	0.2	11	0.3	4	0.1	0	0.0	24	0.6
NW	0	0.0	0	0.0	2	0.0	10	0.2	11	0.3	3	0.1	2	0.0	28	0.7
NNW	0	0.0	0	0.0	5	0.1	8	0.2	8	0.2	1	0.0	0	0.0	22	0.5
	0	0.0	2	0.0	60	1.4	87	2.0	47	1.1	10	0.2	2	0.0	208	4.8

MEAN WIND SPEED: 10.4
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 30 FT
DELTA T: (300-33FT)LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	3	0.1	6	0.1	0	0.0	0	0.0	0	0.0	9	0.2
NNE	0	0.0	0	0.0	7	0.2	9	0.2	0	0.0	0	0.0	0	0.0	16	0.4
NE	0	0.0	0	0.0	2	0.0	2	0.0	2	0.0	0	0.0	0	0.0	6	0.1
ENE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
E	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	3	0.1	4	0.1	1	0.0	0	0.0	8	0.2
SSE	0	0.0	0	0.0	9	0.2	5	0.1	5	0.1	2	0.0	0	0.0	21	0.5
S	0	0.0	0	0.0	6	0.1	1	0.0	0	0.0	0	0.0	0	0.0	7	0.2
SSW	0	0.0	0	0.0	3	0.1	5	0.1	0	0.0	0	0.0	0	0.0	9	0.2
SW	0	0.0	1	0.0	3	0.1	4	0.1	1	0.0	0	0.0	0	0.0	9	0.2
WSW	0	0.0	1	0.0	2	0.0	11	0.3	3	0.1	0	0.0	0	0.0	17	0.4
W	0	0.0	0	0.0	3	0.1	14	0.3	4	0.1	2	0.0	0	0.0	23	0.5
WNW	0	0.0	1	0.0	4	0.1	5	0.1	5	0.1	5	0.1	0	0.0	20	0.5
NW	0	0.0	0	0.0	4	0.1	8	0.2	17	0.4	5	0.1	0	0.0	34	0.8
NNW	0	0.0	1	0.0	6	0.1	12	0.3	6	0.1	1	0.0	0	0.0	26	0.6
	0	0.0	4	0.1	54	1.3	87	2.0	47	1.1	17	0.4	0	0.0	209	4.9

MEAN WIND SPEED: 10.6

MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	2	0.0	19	0.4	31	0.7	10	0.2	2	0.0	0	0.0	64	1.5
NNE	0	0.0	3	0.1	21	0.5	31	0.7	6	0.1	1	0.0	0	0.0	62	1.4
NE	0	0.0	4	0.1	38	0.9	30	0.7	2	0.0	0	0.0	0	0.0	74	1.7
ENE	0	0.0	3	0.1	33	0.8	28	0.7	0	0.0	0	0.0	0	0.0	64	1.5
E	0	0.0	2	0.0	26	0.6	13	0.3	1	0.0	0	0.0	0	0.0	42	1.0
ESE	0	0.0	0	0.0	9	0.2	16	0.4	2	0.0	0	0.0	0	0.0	27	0.6
SE	0	0.0	2	0.0	7	0.2	16	0.4	38	0.9	6	0.1	0	0.0	69	1.6
SSE	0	0.0	0	0.0	25	0.6	55	1.3	65	1.5	14	0.3	0	0.0	159	3.7
S	0	0.0	1	0.0	19	0.4	33	0.8	19	0.4	1	0.0	0	0.0	73	1.7
SSW	0	0.0	7	0.2	19	0.4	36	0.8	15	0.3	0	0.0	0	0.0	77	1.8
SW	0	0.0	3	0.1	21	0.5	30	0.7	15	0.3	2	0.0	0	0.0	71	1.7
WSW	0	0.0	2	0.0	11	0.3	26	0.6	10	0.2	0	0.0	0	0.0	49	1.1
W	0	0.0	2	0.0	19	0.4	27	0.6	16	0.4	4	0.1	0	0.0	68	1.6
WNW	0	0.0	3	0.1	16	0.4	41	1.0	39	0.9	23	0.5	0	0.0	122	2.8
NW	0	0.0	4	0.1	16	0.4	47	1.1	65	1.5	21	0.5	2	0.0	155	3.6
NNW	0	0.0	0	0.0	10	0.2	30	0.7	24	0.6	8	0.2	0	0.0	72	1.7
	0	0.0	38	0.9	309	7.2	490	11.4	327	7.6	82	1.9	2	0.0	1248	29.1

MEAN WIND SPEED: 10.7
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	42	1.0	17	0.4	0	0.0	0	0.0	0	0.0	62	1.4
NNE	0	0.0	7	0.2	31	0.7	17	0.4	1	0.0	0	0.0	0	0.0	56	1.3
NE	0	0.0	11	0.3	24	0.6	5	0.1	0	0.0	0	0.0	0	0.0	40	0.9
ENE	0	0.0	11	0.3	21	0.5	2	0.0	0	0.0	0	0.0	0	0.0	34	0.8
E	0	0.0	9	0.2	31	0.7	3	0.1	0	0.0	0	0.0	0	0.0	43	1.0
ESE	0	0.0	9	0.2	27	0.6	15	0.3	2	0.0	1	0.0	0	0.0	54	1.3
SE	0	0.0	5	0.1	31	0.7	47	1.1	21	0.5	5	0.1	2	0.0	111	2.6
SSE	0	0.0	3	0.1	26	0.6	52	1.2	22	0.5	0	0.0	1	0.0	104	2.4
S	0	0.0	10	0.2	34	0.8	46	1.1	15	0.3	0	0.0	0	0.0	105	2.4
SSW	0	0.0	9	0.2	53	1.2	44	1.0	34	0.8	1	0.0	1	0.0	142	3.3
SW	0	0.0	12	0.3	61	1.4	48	1.1	10	0.2	8	0.2	0	0.0	139	3.2
WSW	0	0.0	7	0.2	59	1.4	55	1.3	9	0.2	1	0.0	0	0.0	131	3.1
W	0	0.0	7	0.2	31	0.7	45	1.0	9	0.2	0	0.0	0	0.0	92	2.1
WNW	0	0.0	10	0.2	39	0.9	30	0.7	8	0.2	4	0.1	0	0.0	91	2.1
NW	0	0.0	10	0.2	41	1.0	71	1.7	26	0.6	5	0.1	0	0.0	153	3.6
NNW	0	0.0	6	0.1	46	1.1	51	1.2	23	0.5	1	0.0	0	0.0	127	3.0
	0	0.0	129	3.0	597	13.9	548	12.8	180	4.2	26	0.6	4	0.1	1484	34.6

MEAN WIND SPEED: 8.3

MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	4	0.1	30	0.7	2	0.0	0	0.0	0	0.0	0	0.0	36	0.8
NNE	0	0.0	2	0.0	21	0.5	1	0.0	0	0.0	0	0.0	0	0.0	24	0.6
NE	0	0.0	4	0.1	15	0.3	0	0.0	0	0.0	0	0.0	0	0.0	19	0.4
ENE	0	0.0	3	0.1	6	0.1	0	0.0	0	0.0	0	0.0	0	0.0	9	0.2
E	0	0.0	8	0.2	10	0.2	0	0.0	0	0.0	0	0.0	0	0.0	18	0.4
ESE	0	0.0	4	0.1	16	0.4	3	0.1	0	0.0	0	0.0	0	0.0	23	0.5
SE	0	0.0	10	0.2	30	0.7	32	0.7	12	0.3	0	0.0	0	0.0	84	2.0
SSE	0	0.0	3	0.1	25	0.6	27	0.6	15	0.3	0	0.0	0	0.0	70	1.6
S	0	0.0	10	0.2	18	0.4	12	0.3	7	0.2	2	0.0	0	0.0	49	1.1
SSW	0	0.0	2	0.0	22	0.5	10	0.2	6	0.1	1	0.0	1	0.0	42	1.0
SW	0	0.0	3	0.1	33	0.8	15	0.3	3	0.1	1	0.0	0	0.0	55	1.3
WSW	0	0.0	5	0.1	18	0.4	12	0.3	0	0.0	0	0.0	0	0.0	35	0.8
W	0	0.0	2	0.0	13	0.3	4	0.1	0	0.0	0	0.0	0	0.0	19	0.4
WNW	0	0.0	3	0.1	12	0.3	3	0.1	0	0.0	0	0.0	0	0.0	18	0.4
NW	0	0.0	3	0.1	14	0.3	4	0.1	0	0.0	0	0.0	0	0.0	21	0.5
NNW	0	0.0	5	0.1	16	0.4	4	0.1	0	0.0	0	0.0	0	0.0	25	0.6
	0	0.0	71	1.7	299	7.0	129	3.0	43	1.0	4	0.1	1	0.0	547	12.7

MEAN WIND SPEED: 6.9
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 30 FT
DELTA T: (300-33FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0
NNE	0	0.0	0	0.0	5	0.1	0	0.0	0	0.0	0	0.0	0	0.0	5	0.1
NE	0	0.0	0	0.0	5	0.1	0	0.0	0	0.0	0	0.0	0	0.0	5	0.1
ENE	0	0.0	2	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	0.1
E	0	0.0	2	0.0	3	0.1	0	0.0	0	0.0	0	0.0	0	0.0	5	0.1
ESE	0	0.0	1	0.0	8	0.2	0	0.0	0	0.0	0	0.0	0	0.0	9	0.2
SE	0	0.0	3	0.1	31	0.7	24	0.6	31	0.7	0	0.0	0	0.0	89	2.1
SSE	0	0.0	3	0.1	16	0.4	10	0.2	6	0.1	0	0.0	0	0.0	35	0.8
S	0	0.0	1	0.0	9	0.2	3	0.1	1	0.0	0	0.0	0	0.0	14	0.3
SSW	0	0.0	2	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	4	0.1
SW	0	0.0	1	0.0	3	0.1	1	0.0	0	0.0	0	0.0	0	0.0	5	0.1
WSW	0	0.0	0	0.0	4	0.1	2	0.0	0	0.0	0	0.0	0	0.0	6	0.1
W	0	0.0	0	0.0	1	0.0	5	0.1	0	0.0	0	0.0	0	0.0	6	0.1
WNW	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NW	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
	0	0.0	15	0.3	91	2.1	46	1.1	38	0.9	0	0.0	0	0.0	190	4.4

MEAN WIND SPEED: 8.2
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 30 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	9	0.2	113	2.6	79	1.8	11	0.3	2	0.0	0	0.0	214	5.0
NNE	0	0.0	13	0.3	86	2.0	74	1.7	8	0.2	1	0.0	0	0.0	182	4.2
NE	0	0.0	19	0.4	92	2.1	47	1.1	7	0.2	0	0.0	0	0.0	165	3.8
ENE	0	0.0	19	0.4	66	1.5	33	0.8	0	0.0	0	0.0	0	0.0	118	2.7
E	0	0.0	21	0.5	72	1.7	20	0.5	1	0.0	0	0.0	0	0.0	114	2.7
ESE	0	0.0	14	0.3	61	1.4	35	0.8	4	0.1	1	0.0	0	0.0	115	2.7
SE	0	0.0	20	0.5	105	2.4	134	3.1	116	2.7	21	0.5	2	0.0	398	9.3
SSE	0	0.0	10	0.2	123	2.9	167	3.9	126	2.9	16	0.4	1	0.0	443	10.3
S	0	0.0	22	0.5	110	2.6	101	2.4	44	1.0	3	0.1	0	0.0	280	6.5
SSW	0	0.0	20	0.5	113	2.6	100	2.3	58	1.4	3	0.1	2	0.0	296	6.9
SW	0	0.0	20	0.5	146	3.4	115	2.7	35	0.8	11	0.3	0	0.0	327	7.6
WSW	0	0.0	15	0.3	101	2.4	155	3.6	34	0.8	2	0.0	0	0.0	307	7.2
W	0	0.0	12	0.3	71	1.7	123	2.9	46	1.1	12	0.3	0	0.0	264	6.2
WNW	0	0.0	17	0.4	79	1.8	94	2.2	97	2.3	41	1.0	0	0.0	328	7.6
NW	0	0.0	17	0.4	79	1.8	157	3.7	135	3.1	37	0.9	5	0.1	430	10.0
NNW	0	0.0	12	0.3	92	2.1	125	2.9	70	1.6	11	0.3	0	0.0	310	7.2
	0	0.0	260	6.1	1509	35.2	1559	36.3	792	18.5	161	3.8	10	0.2	4291	100.0
MEAN WIND SPEED: 9.3														MISSING HOURS: 53		

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 30 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

WIND SPEED GROUPS (MPH)																
DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	9	0.2	113	2.6	80	1.9	11	0.3	2	0.0	0	0.0	215	5.0
NNE	0	0.0	13	0.3	86	2.0	74	1.7	8	0.2	1	0.0	0	0.0	182	4.2
NE	0	0.0	19	0.4	92	2.1	47	1.1	7	0.2	0	0.0	0	0.0	165	3.8
ENE	0	0.0	19	0.4	66	1.5	33	0.8	0	0.0	0	0.0	0	0.0	118	2.7
E	0	0.0	21	0.5	72	1.7	20	0.5	1	0.0	0	0.0	0	0.0	114	2.7
ESE	0	0.0	14	0.3	61	1.4	35	0.8	4	0.1	1	0.0	0	0.0	115	2.7
SE	0	0.0	20	0.5	105	2.4	134	3.1	116	2.7	21	0.5	2	0.0	398	9.3
SSE	0	0.0	10	0.2	123	2.9	167	3.9	126	2.9	16	0.4	1	0.0	443	10.3
S	0	0.0	22	0.5	110	2.6	101	2.4	44	1.0	3	0.1	0	0.0	280	6.5
SSW	0	0.0	20	0.5	113	2.6	100	2.3	58	1.4	3	0.1	2	0.0	296	6.9
SW	0	0.0	20	0.5	146	3.4	115	2.7	37	0.9	11	0.3	0	0.0	329	7.7
WSW	0	0.0	15	0.3	101	2.4	155	3.6	34	0.8	2	0.0	0	0.0	307	7.1
W	0	0.0	12	0.3	71	1.7	123	2.9	46	1.1	12	0.3	0	0.0	264	6.1
WNW	0	0.0	17	0.4	79	1.8	94	2.2	97	2.3	41	1.0	0	0.0	328	7.6
NW	0	0.0	17	0.4	79	1.8	158	3.7	135	3.1	37	0.9	5	0.1	431	10.0
NNW	0	0.0	12	0.3	92	2.1	125	2.9	70	1.6	11	0.3	0	0.0	310	7.2
	0	0.0	260	6.1	1509	35.1	1561	36.3	794	18.5	161	3.7	10	0.2	4295	100.0
MEAN WIND SPEED: 9.3																
															MISSING HOURS: 49	

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	7	0.2	6	0.1	3	0.1	0	0.0	0	0.0	16	0.4
NNE	0	0.0	0	0.0	1	0.0	13	0.3	1	0.0	0	0.0	0	0.0	15	0.4
NE	0	0.0	0	0.0	2	0.0	6	0.1	2	0.0	1	0.0	0	0.0	11	0.3
ENE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	0	0.0	4	0.1	2	0.0	0	0.0	0	0.0	6	0.1
ESE	0	0.0	1	0.0	1	0.0	0	0.0	1	0.0	0	0.0	0	0.0	3	0.1
SE	0	0.0	0	0.0	1	0.0	8	0.2	7	0.2	7	0.2	8	0.2	31	0.7
SSE	0	0.0	0	0.0	18	0.4	15	0.4	8	0.2	4	0.1	0	0.0	45	1.1
S	0	0.0	0	0.0	11	0.3	4	0.1	0	0.0	0	0.0	0	0.0	15	0.4
SSW	0	0.0	0	0.0	5	0.1	0	0.0	3	0.1	2	0.0	0	0.0	10	0.2
SW	0	0.0	1	0.0	8	0.2	17	0.4	4	0.1	4	0.1	0	0.0	34	0.8
WSW	0	0.0	0	0.0	4	0.1	17	0.4	19	0.5	7	0.2	0	0.0	47	1.1
W	0	0.0	0	0.0	1	0.0	5	0.1	19	0.5	10	0.2	5	0.1	40	0.9
WNW	0	0.0	0	0.0	4	0.1	7	0.2	13	0.3	23	0.5	4	0.1	51	1.2
NW	0	0.0	0	0.0	3	0.1	8	0.2	18	0.4	9	0.2	1	0.0	39	0.9
NNW	0	0.0	0	0.0	4	0.1	18	0.4	15	0.4	2	0.0	0	0.0	39	0.9
	0	0.0	2	0.0	70	1.7	129	3.1	115	2.7	69	1.6	18	0.4	403	9.6

MEAN WIND SPEED: 13.5
MISSING: 2

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	3	0.1	7	0.2	0	0.0	0	0.0	0	0.0	10	0.2
NNE	0	0.0	0	0.0	3	0.1	4	0.1	1	0.0	0	0.0	0	0.0	8	0.2
NE	0	0.0	0	0.0	3	0.1	3	0.1	2	0.0	0	0.0	0	0.0	8	0.2
ENE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	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	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	4	0.1	2	0.0	2	0.0	3	0.1	0	0.0	6	0.1
S	0	0.0	2	0.0	4	0.1	1	0.0	0	0.0	0	0.0	1	0.0	11	0.3
SSW	0	0.0	0	0.0	6	0.1	0	0.0	2	0.0	1	0.0	0	0.0	7	0.2
SW	0	0.0	0	0.0	7	0.2	4	0.1	2	0.0	0	0.0	0	0.0	9	0.2
WSW	0	0.0	0	0.0	2	0.0	16	0.4	7	0.2	2	0.0	0	0.0	13	0.3
W	0	0.0	0	0.0	3	0.1	8	0.2	9	0.2	7	0.2	0	0.0	27	0.6
WNW	0	0.0	0	0.0	1	0.0	6	0.1	5	0.1	6	0.1	3	0.1	27	0.6
NW	0	0.0	0	0.0	0	0.0	3	0.1	17	0.4	4	0.1	4	0.1	21	0.5
NNW	0	0.0	0	0.0	5	0.1	9	0.2	7	0.2	3	0.1	1	0.0	28	0.7
															25	0.6
	0	0.0	2	0.0	43	1.0	65	1.5	57	1.4	26	0.6	9	0.2	202	4.8

MEAN WIND SPEED: 13.1
MISSING: 6

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	3	0.1	1	0.0	1	0.0	0	0.0	0	0.0	5	0.1
NNE	0	0.0	0	0.0	4	0.1	4	0.1	3	0.1	0	0.0	0	0.0	11	0.3
NE	0	0.0	0	0.0	2	0.0	2	0.0	2	0.0	0	0.0	0	0.0	6	0.1
ENE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	2	0.0	4	0.1	3	0.1	2	0.0	11	0.3
SSE	0	0.0	2	0.0	4	0.1	5	0.1	3	0.1	2	0.0	0	0.0	16	0.4
S	0	0.0	0	0.0	7	0.2	2	0.0	0	0.0	0	0.0	0	0.0	9	0.2
SSW	0	0.0	0	0.0	0	0.0	0	0.0	5	0.1	1	0.0	0	0.0	6	0.1
SW	0	0.0	0	0.0	2	0.0	3	0.1	4	0.1	0	0.0	0	0.0	9	0.2
WSW	0	0.0	1	0.0	3	0.1	8	0.2	5	0.1	1	0.0	0	0.0	18	0.4
W	0	0.0	0	0.0	4	0.1	10	0.2	8	0.2	1	0.0	2	0.0	25	0.6
WNW	0	0.0	1	0.0	1	0.0	2	0.0	8	0.2	1	0.0	6	0.1	19	0.5
NW	0	0.0	1	0.0	3	0.1	4	0.1	10	0.2	12	0.3	4	0.1	34	0.8
NNW	0	0.0	0	0.0	3	0.1	7	0.2	11	0.3	2	0.0	2	0.0	25	0.6
	0	0.0	5	0.1	38	0.9	52	1.2	64	1.5	23	0.5	16	0.4	198	4.7

MEAN WIND SPEED: 13.7
MISSING: 11

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	2	0.0	8	0.2	21	0.5	19	0.5	7	0.2	3	0.1	60	1.4
NNE	0	0.0	3	0.1	5	0.1	30	0.7	14	0.3	2	0.0	1	0.0	55	1.3
NE	0	0.0	2	0.0	17	0.4	35	0.8	14	0.3	2	0.0	0	0.0	70	1.7
ENE	0	0.0	2	0.0	15	0.4	40	0.9	13	0.3	0	0.0	0	0.0	70	1.7
E	0	0.0	1	0.0	9	0.2	24	0.6	5	0.1	0	0.0	0	0.0	39	0.9
ESE	0	0.0	2	0.0	3	0.1	8	0.2	7	0.2	1	0.0	0	0.0	21	0.5
SE	0	0.0	1	0.0	9	0.2	7	0.2	25	0.6	30	0.7	7	0.2	79	1.9
SSE	0	0.0	1	0.0	16	0.4	23	0.5	69	1.6	30	0.7	9	0.2	148	3.5
S	0	0.0	3	0.1	12	0.3	24	0.6	25	0.6	3	0.1	0	0.0	67	1.6
SSW	0	0.0	1	0.0	4	0.1	34	0.8	22	0.5	13	0.3	2	0.0	76	1.8
SW	0	0.0	1	0.0	12	0.3	22	0.5	25	0.6	10	0.2	2	0.0	72	1.7
WSW	0	0.0	0	0.0	9	0.2	19	0.5	15	0.4	6	0.1	0	0.0	49	1.2
W	0	0.0	2	0.0	12	0.3	31	0.7	19	0.5	12	0.3	5	0.1	81	1.9
WNW	0	0.0	0	0.0	11	0.3	21	0.5	26	0.6	36	0.9	21	0.5	115	2.7
NW	0	0.0	1	0.0	10	0.2	24	0.6	44	1.0	54	1.3	24	0.6	157	3.7
NNW	0	0.0	1	0.0	5	0.1	13	0.3	19	0.5	17	0.4	9	0.2	64	1.5
	0	0.0	23	0.5	157	3.7	376	8.9	361	8.6	223	5.3	83	2.0	1223	29.0

MEAN WIND SPEED: 14.3
MISSING: 25

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)																
DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	1	0.0	13	0.3	24	0.6	11	0.3	0	0.0	0	0.0	49	1.2
NNE	0	0.0	4	0.1	17	0.4	29	0.7	9	0.2	1	0.0	0	0.0	60	1.4
NE	0	0.0	2	0.0	6	0.1	12	0.3	5	0.1	0	0.0	0	0.0	25	0.6
ENE	0	0.0	3	0.1	9	0.2	18	0.4	2	0.0	0	0.0	0	0.0	32	0.8
E	0	0.0	8	0.2	15	0.4	21	0.5	2	0.0	0	0.0	0	0.0	46	1.1
ESE	0	0.0	3	0.1	9	0.2	28	0.7	6	0.1	2	0.0	1	0.0	49	1.2
SE	0	0.0	0	0.0	10	0.2	24	0.6	25	0.6	19	0.5	12	0.3	90	2.1
SSE	0	0.0	3	0.1	21	0.5	37	0.9	44	1.0	10	0.2	1	0.0	116	2.8
S	0	0.0	6	0.1	12	0.3	30	0.7	29	0.7	4	0.1	2	0.0	83	2.0
SSW	0	0.0	2	0.0	30	0.7	62	1.5	37	0.9	31	0.7	8	0.2	170	4.0
SW	0	0.0	2	0.0	27	0.6	71	1.7	35	0.8	9	0.2	9	0.2	153	3.6
WSW	0	0.0	8	0.2	19	0.5	51	1.2	37	0.9	5	0.1	3	0.1	123	2.9
W	0	0.0	1	0.0	16	0.4	43	1.0	42	1.0	10	0.2	2	0.0	114	2.7
WNW	0	0.0	1	0.0	18	0.4	33	0.8	16	0.4	8	0.2	3	0.1	79	1.9
NW	0	0.0	1	0.0	10	0.2	45	1.1	71	1.7	28	0.7	5	0.1	160	3.8
NNW	0	0.0	3	0.1	6	0.1	24	0.6	45	1.1	21	0.5	4	0.1	103	2.4
	0	0.0	48	1.1	238	5.7	552	13.1	416	9.9	148	3.5	50	1.2	1452	34.5
MEAN WIND SPEED: 12.3																
MISSING: 32																

MEAN WIND SPEED: 12.3
MISSING: 32

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	6	0.1	12	0.3	9	0.2	0	0.0	0	0.0	27	0.6
NNE	0	0.0	0	0.0	4	0.1	22	0.5	1	0.0	0	0.0	0	0.0	27	0.6
NE	0	0.0	2	0.0	4	0.1	5	0.1	2	0.0	0	0.0	0	0.0	13	0.3
ENE	0	0.0	0	0.0	2	0.0	3	0.1	0	0.0	0	0.0	0	0.0	5	0.1
E	0	0.0	0	0.0	5	0.1	4	0.1	0	0.0	0	0.0	0	0.0	9	0.2
ESE	0	0.0	0	0.0	1	0.0	8	0.2	1	0.0	0	0.0	0	0.0	10	0.2
SE	0	0.0	1	0.0	7	0.2	21	0.5	15	0.4	10	0.2	6	0.1	60	1.4
SSE	0	0.0	2	0.0	9	0.2	16	0.4	22	0.5	16	0.4	2	0.0	67	1.6
S	0	0.0	1	0.0	10	0.2	19	0.5	15	0.4	10	0.2	2	0.0	57	1.4
SSW	0	0.0	1	0.0	15	0.4	22	0.5	17	0.4	5	0.1	1	0.0	61	1.4
SW	0	0.0	0	0.0	9	0.2	49	1.2	15	0.4	4	0.1	3	0.1	80	1.9
WSW	0	0.0	1	0.0	8	0.2	21	0.5	13	0.3	0	0.0	0	0.0	43	1.0
W	0	0.0	1	0.0	4	0.1	8	0.2	5	0.1	1	0.0	0	0.0	19	0.5
WNW	0	0.0	1	0.0	7	0.2	8	0.2	1	0.0	1	0.0	0	0.0	18	0.4
NW	0	0.0	0	0.0	1	0.0	18	0.4	8	0.2	0	0.0	0	0.0	27	0.6
NNW	0	0.0	4	0.1	3	0.1	8	0.2	5	0.1	0	0.0	0	0.0	20	0.5
	0	0.0	14	0.3	95	2.3	244	5.8	129	3.1	47	1.1	14	0.3	543	12.9

MEAN WIND SPEED: 11.8
MISSING: 4

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)															
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
NNE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2
NE	0	0.0	0	0.0	0	0.0	4	0.1	0	0.0	0	0.0	0	0.0	4
ENE	0	0.0	0	0.0	2	0.0	2	0.0	0	0.0	0	0.0	0	0.0	4
E	0	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4
ESE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2
SE	0	0.0	0	0.0	2	0.0	4	0.1	6	0.1	5	0.1	6	0.1	2
SSE	0	0.0	0	0.0	3	0.1	11	0.3	11	0.3	17	0.4	13	0.3	23
S	0	0.0	1	0.0	6	0.1	17	0.4	9	0.2	2	0.0	0	0.0	55
SSW	0	0.0	1	0.0	5	0.1	14	0.3	7	0.2	3	0.1	0	0.0	35
SW	0	0.0	0	0.0	3	0.1	8	0.2	2	0.0	0	0.0	0	0.0	30
WSW	0	0.0	0	0.0	0	0.0	7	0.2	4	0.1	0	0.0	0	0.0	13
W	0	0.0	0	0.0	2	0.0	0	0.0	1	0.0	0	0.0	0	0.0	11
WNW	0	0.0	0	0.0	1	0.0	2	0.0	2	0.0	0	0.0	0	0.0	3
NW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5
NNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
					0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1
	0	0.0	2	0.0	28	0.7	71	1.7	43	1.0	27	0.6	19	0.5	190
															4.5

MEAN WIND SPEED: 13.7
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	40	0.9	71	1.7	43	1.0	7	0.2	3	0.1	167	4.0
NNE	0	0.0	7	0.2	35	0.8	103	2.4	29	0.7	3	0.1	1	0.0	178	4.2
NE	0	0.0	6	0.1	34	0.8	67	1.6	27	0.6	3	0.1	0	0.0	137	3.3
ENE	0	0.0	5	0.1	29	0.7	66	1.6	15	0.4	0	0.0	0	0.0	115	2.7
E	0	0.0	9	0.2	33	0.8	54	1.3	9	0.2	0	0.0	0	0.0	105	2.5
ESE	0	0.0	6	0.1	15	0.4	45	1.1	15	0.4	3	0.1	1	0.0	85	2.0
SE	0	0.0	2	0.0	30	0.7	67	1.6	85	2.0	74	1.8	42	1.0	300	7.1
SSE	0	0.0	8	0.2	75	1.8	109	2.6	159	3.8	82	1.9	25	0.6	458	10.9
S	0	0.0	13	0.3	62	1.5	97	2.3	78	1.9	19	0.5	4	0.1	273	6.5
SSW	0	0.0	5	0.1	65	1.5	132	3.1	93	2.2	56	1.3	11	0.3	362	8.6
SW	0	0.0	4	0.1	68	1.6	174	4.1	87	2.1	27	0.6	14	0.3	374	8.9
WSW	0	0.0	10	0.2	45	1.1	139	3.3	100	2.4	21	0.5	3	0.1	318	7.6
W	0	0.0	4	0.1	42	1.0	105	2.5	103	2.4	41	1.0	14	0.3	309	7.3
WNW	0	0.0	3	0.1	43	1.0	79	1.9	71	1.7	75	1.8	37	0.9	308	7.3
NW	0	0.0	3	0.1	27	0.6	102	2.4	168	4.0	107	2.5	38	0.9	445	10.6
NNW	0	0.0	8	0.2	26	0.6	79	1.9	103	2.4	45	1.1	16	0.4	277	6.6
	0	0.0	96	2.3	669	15.9	1489	35.4	1185	28.1	563	13.4	209	5.0	4211	100.0

MEAN WIND SPEED: 13.1

MISSING HOURS: 133

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 150 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

DIRECTION		WIND SPEED GROUPS (MPH)														SUM PERCENT	
		0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6			
		SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	3	0.1	40	0.9	72	1.7	43	1.0	7	0.2	3	0.1	168	4.0	
NNE	0	0.0	7	0.2	35	0.8	103	2.4	29	0.7	3	0.1	1	0.0	178	4.2	
NE	0	0.0	6	0.1	34	0.8	67	1.6	27	0.6	3	0.1	0	0.0	137	3.3	
ENE	0	0.0	5	0.1	29	0.7	66	1.6	15	0.4	0	0.0	0	0.0	115	2.7	
E	0	0.0	9	0.2	33	0.8	54	1.3	9	0.2	0	0.0	0	0.0	105	2.5	
ESE	0	0.0	6	0.1	15	0.4	45	1.1	15	0.4	3	0.1	1	0.0	85	2.0	
SE	0	0.0	2	0.0	30	0.7	67	1.6	85	2.0	74	1.8	42	1.0	300	7.1	
SSE	0	0.0	8	0.2	75	1.8	109	2.6	159	3.8	82	1.9	25	0.6	458	10.9	
S	0	0.0	13	0.3	62	1.5	97	2.3	78	1.9	19	0.5	4	0.1	273	6.5	
SSW	0	0.0	5	0.1	65	1.5	132	3.1	93	2.2	56	1.3	11	0.3	362	8.6	
SW	0	0.0	4	0.1	68	1.6	174	4.1	88	2.1	28	0.7	14	0.3	376	8.9	
WSW	0	0.0	10	0.2	45	1.1	139	3.3	100	2.4	21	0.5	3	0.1	318	7.5	
W	0	0.0	4	0.1	42	1.0	105	2.5	103	2.4	41	1.0	14	0.3	309	7.3	
WNW	0	0.0	3	0.1	43	1.0	79	1.9	71	1.7	75	1.8	37	0.9	308	7.3	
NW	0	0.0	3	0.1	27	0.6	103	2.4	168	4.0	107	2.5	38	0.9	446	10.6	
NNW	0	0.0	8	0.2	26	0.6	79	1.9	103	2.4	45	1.1	16	0.4	277	6.6	
		0	0.0	96	2.3	669	15.9	1491	35.4	1186	28.1	564	13.4	209	5.0	4215	100.0

MEAN WIND SPEED: 13.1

MISSING HOURS: 129

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)

DIRECTION	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	4	0.1	11	0.3	2	0.0	0	0.0	0	0.0	17	0.4
NNE	0	0.0	0	0.0	0	0.0	12	0.3	4	0.1	0	0.0	0	0.0	16	0.4
NE	0	0.0	0	0.0	1	0.0	7	0.2	1	0.0	1	0.0	0	0.0	10	0.2
ENE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	1	0.0	3	0.1	2	0.0	0	0.0	0	0.0	6	0.1
ESE	0	0.0	0	0.0	3	0.1	1	0.0	1	0.0	0	0.0	0	0.0	5	0.1
SE	0	0.0	0	0.0	1	0.0	6	0.1	5	0.1	8	0.2	8	0.2	28	0.7
SSE	0	0.0	1	0.0	9	0.2	7	0.2	5	0.1	3	0.1	0	0.0	25	0.6
S	0	0.0	1	0.0	13	0.3	11	0.3	5	0.1	0	0.0	0	0.0	30	0.7
SSW	0	0.0	0	0.0	9	0.2	1	0.0	2	0.0	2	0.0	0	0.0	14	0.3
SW	0	0.0	0	0.0	10	0.2	10	0.2	3	0.1	5	0.1	0	0.0	28	0.7
WSW	0	0.0	0	0.0	6	0.1	19	0.4	19	0.4	7	0.2	1	0.0	52	1.2
W	0	0.0	0	0.0	2	0.0	5	0.1	20	0.5	10	0.2	7	0.2	44	1.0
WNW	0	0.0	0	0.0	4	0.1	6	0.1	9	0.2	26	0.6	6	0.1	51	1.2
NW	0	0.0	0	0.0	3	0.1	7	0.2	17	0.4	7	0.2	5	0.1	39	0.9
NNW	0	0.0	0	0.0	3	0.1	16	0.4	18	0.4	1	0.0	0	0.0	38	0.9
	0	0.0	2	0.0	69	1.6	123	2.9	113	2.6	70	1.6	27	0.6	404	9.4

MEAN WIND SPEED: 14.0

MISSING: 1

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	5	0.1	7	0.2	0	0.0	0	0.0	0	0.0	12	0.3
NNE	0	0.0	0	0.0	4	0.1	5	0.1	0	0.0	1	0.0	0	0.0	10	0.2
NE	0	0.0	0	0.0	2	0.0	2	0.0	2	0.0	0	0.0	0	0.0	6	0.1
ENE	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
E	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	0	0.0	1	0.0	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	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	2	0.0	3	0.1	5	0.1	1	0.0	0	0.0	11	0.3
S	0	0.0	1	0.0	6	0.1	0	0.0	1	0.0	1	0.0	0	0.0	9	0.2
SSW	0	0.0	2	0.0	4	0.1	0	0.0	1	0.0	1	0.0	0	0.0	8	0.2
SW	0	0.0	0	0.0	5	0.1	1	0.0	3	0.1	0	0.0	0	0.0	9	0.2
WSW	0	0.0	1	0.0	6	0.1	13	0.3	11	0.3	0	0.0	1	0.0	32	0.7
W	0	0.0	0	0.0	3	0.1	10	0.2	10	0.2	8	0.2	2	0.0	33	0.8
WNW	0	0.0	0	0.0	1	0.0	5	0.1	4	0.1	4	0.1	6	0.1	20	0.5
NW	0	0.0	0	0.0	1	0.0	2	0.0	13	0.3	5	0.1	6	0.1	27	0.6
NNW	0	0.0	0	0.0	1	0.0	13	0.3	6	0.1	4	0.1	1	0.0	25	0.6
	0	0.0	4	0.1	42	1.0	63	1.5	56	1.3	25	0.6	17	0.4	207	4.8

MEAN WIND SPEED: 13.4
MISSING: 1

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASSWIND: 300 FT
DELTA T: (300-33FT)LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)

	0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	2	0.0	4	0.1	1	0.0	0	0.0	0	0.0	7	0.2
NNE	0	0.0	0	0.0	7	0.2	7	0.2	4	0.1	0	0.0	0	0.0	18	0.4
NE	0	0.0	0	0.0	1	0.0	2	0.0	2	0.0	0	0.0	0	0.0	5	0.1
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	3	0.1	2	0.0	4	0.1	2	0.0	11	0.3
SSE	0	0.0	2	0.0	4	0.1	1	0.0	3	0.1	0	0.0	0	0.0	10	0.2
S	0	0.0	1	0.0	1	0.0	5	0.1	1	0.0	1	0.0	0	0.0	9	0.2
SSW	0	0.0	2	0.0	1	0.0	2	0.0	4	0.1	1	0.0	0	0.0	10	0.2
SW	0	0.0	2	0.0	1	0.0	4	0.1	4	0.1	1	0.0	0	0.0	12	0.3
WSW	0	0.0	0	0.0	3	0.1	4	0.1	2	0.0	1	0.0	0	0.0	10	0.2
W	0	0.0	0	0.0	5	0.1	7	0.2	13	0.3	5	0.1	2	0.0	32	0.7
WNW	0	0.0	0	0.0	3	0.1	2	0.0	6	0.1	5	0.1	7	0.2	23	0.5
NW	0	0.0	1	0.0	2	0.0	5	0.1	8	0.2	12	0.3	7	0.2	35	0.8
NNW	0	0.0	0	0.0	4	0.1	5	0.1	13	0.3	0	0.0	2	0.0	24	0.6
	0	0.0	8	0.2	36	0.8	52	1.2	63	1.5	30	0.7	20	0.5	209	4.9

MEAN WIND SPEED: 14.0

MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	5	0.1	19	0.4	21	0.5	15	0.3	5	0.1	65	1.5
NNE	0	0.0	3	0.1	3	0.1	23	0.5	12	0.3	7	0.2	2	0.0	50	1.2
NE	0	0.0	1	0.0	16	0.4	32	0.7	28	0.7	2	0.0	0	0.0	79	1.8
ENE	0	0.0	1	0.0	9	0.2	37	0.9	19	0.4	0	0.0	0	0.0	66	1.5
E	0	0.0	1	0.0	9	0.2	22	0.5	5	0.1	2	0.0	0	0.0	39	0.9
ESE	0	0.0	2	0.0	5	0.1	7	0.2	16	0.4	3	0.1	0	0.0	33	0.8
SE	0	0.0	1	0.0	5	0.1	9	0.2	22	0.5	24	0.6	16	0.4	77	1.8
SSE	0	0.0	6	0.1	12	0.3	15	0.3	44	1.0	37	0.9	8	0.2	122	2.8
S	0	0.0	0	0.0	8	0.2	21	0.5	48	1.1	5	0.1	0	0.0	82	1.9
SSW	0	0.0	1	0.0	7	0.2	30	0.7	30	0.7	10	0.2	3	0.1	81	1.9
SW	0	0.0	0	0.0	7	0.2	19	0.4	21	0.5	16	0.4	2	0.0	65	1.5
WSW	0	0.0	0	0.0	6	0.1	18	0.4	19	0.4	8	0.2	0	0.0	51	1.2
W	0	0.0	0	0.0	13	0.3	20	0.5	25	0.6	17	0.4	10	0.2	85	2.0
WNW	0	0.0	0	0.0	13	0.3	28	0.7	22	0.5	38	0.9	31	0.7	132	3.1
NW	0	0.0	0	0.0	5	0.1	19	0.4	34	0.8	52	1.2	45	1.0	155	3.6
NNW	0	0.0	2	0.0	7	0.2	14	0.3	21	0.5	16	0.4	6	0.1	66	1.5
	0	0.0	18	0.4	130	3.0	333	7.8	387	9.0	252	5.9	128	3.0	1248	29.1

MEAN WIND SPEED: 15.4
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	12	0.3	26	0.6	16	0.4	2	0.0	0	0.0	56	1.3
NNE	0	0.0	1	0.0	4	0.1	21	0.5	24	0.6	5	0.1	0	0.0	55	1.3
NE	0	0.0	1	0.0	5	0.1	8	0.2	10	0.2	0	0.0	0	0.0	24	0.6
ENE	0	0.0	3	0.1	6	0.1	14	0.3	6	0.1	0	0.0	0	0.0	29	0.7
E	0	0.0	2	0.0	13	0.3	20	0.5	13	0.3	1	0.0	0	0.0	49	1.1
ESE	0	0.0	1	0.0	3	0.1	11	0.3	11	0.3	7	0.2	3	0.1	36	0.8
SE	0	0.0	2	0.0	9	0.2	13	0.3	29	0.7	13	0.3	16	0.4	82	1.9
SSE	0	0.0	1	0.0	14	0.3	20	0.5	45	1.0	13	0.3	5	0.1	98	2.3
S	0	0.0	3	0.1	10	0.2	33	0.8	38	0.9	6	0.1	2	0.0	92	2.1
SSW	0	0.0	2	0.0	14	0.3	45	1.0	58	1.4	34	0.8	15	0.3	168	3.9
SW	0	0.0	2	0.0	11	0.3	54	1.3	58	1.4	24	0.6	10	0.2	159	3.7
WSW	0	0.0	2	0.0	8	0.2	35	0.8	59	1.4	10	0.2	5	0.1	119	2.8
W	0	0.0	2	0.0	10	0.2	46	1.1	58	1.4	25	0.6	4	0.1	145	3.4
WNW	0	0.0	0	0.0	8	0.2	25	0.6	31	0.7	17	0.4	7	0.2	88	2.1
NW	0	0.0	0	0.0	2	0.0	29	0.7	86	2.0	40	0.9	14	0.3	171	4.0
NNW	0	0.0	2	0.0	6	0.1	25	0.6	42	1.0	30	0.7	8	0.2	113	2.6
	0	0.0	24	0.6	135	3.1	425	9.9	584	13.6	227	5.3	89	2.1	1484	34.6

MEAN WIND SPEED: 14.5
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	0	0.0	7	0.2	7	0.2	21	0.5	1	0.0	0	0.0	36	0.8
NNE	0	0.0	0	0.0	3	0.1	4	0.1	20	0.5	1	0.0	0	0.0	28	0.7
NE	0	0.0	1	0.0	1	0.0	3	0.1	5	0.1	1	0.0	0	0.0	11	0.3
ENE	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
E	0	0.0	1	0.0	4	0.1	1	0.0	0	0.0	0	0.0	0	0.0	6	0.1
ESE	0	0.0	1	0.0	1	0.0	2	0.0	1	0.0	3	0.1	0	0.0	8	0.2
SE	0	0.0	0	0.0	6	0.1	5	0.1	5	0.1	3	0.1	5	0.1	24	0.6
SSE	0	0.0	0	0.0	3	0.1	13	0.3	22	0.5	10	0.2	10	0.2	58	1.4
S	0	0.0	1	0.0	12	0.3	14	0.3	30	0.7	16	0.4	4	0.1	77	1.8
SSW	0	0.0	2	0.0	9	0.2	13	0.3	29	0.7	13	0.3	6	0.1	72	1.7
SW	0	0.0	0	0.0	4	0.1	17	0.4	46	1.1	9	0.2	2	0.0	78	1.8
WSW	0	0.0	1	0.0	2	0.0	14	0.3	38	0.9	8	0.2	0	0.0	63	1.5
W	0	0.0	1	0.0	1	0.0	8	0.2	10	0.2	3	0.1	1	0.0	24	0.6
WNW	0	0.0	1	0.0	3	0.1	3	0.1	7	0.2	0	0.0	0	0.0	14	0.3
NW	0	0.0	0	0.0	3	0.1	5	0.1	14	0.3	6	0.1	0	0.0	28	0.7
NNW	0	0.0	0	0.0	2	0.0	6	0.1	7	0.2	2	0.0	0	0.0	17	0.4
	0	0.0	9	0.2	63	1.5	116	2.7	255	5.9	76	1.8	28	0.7	547	12.8

MEAN WIND SPEED: 14.4
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: 300 FT
DELTA T: (300-33FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT		SUM PERCENT			
N	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NNE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NE	0	0.0	1	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ENE	0	0.0	0	0.0	0	0.0	3	0.1	2	0.0	0	0.0	0	0.0	4	0.1
E	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
ESE	0	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	0	0.0	0	0.0	2	0.0
SSE	0	0.0	0	0.0	3	0.1	2	0.0	1	0.0	0	0.0	0	0.0	5	0.1
S	0	0.0	0	0.0	5	0.1	4	0.1	7	0.2	12	0.3	13	0.3	37	0.9
SSW	0	0.0	0	0.0	6	0.1	6	0.1	12	0.3	10	0.2	6	0.1	37	0.9
SW	0	0.0	0	0.0	3	0.1	10	0.2	22	0.5	6	0.1	1	0.0	41	1.0
WSW	0	0.0	0	0.0	1	0.0	4	0.1	14	0.3	3	0.1	0	0.0	30	0.7
W	0	0.0	0	0.0	4	0.1	0	0.0	6	0.1	4	0.1	0	0.0	15	0.3
WNW	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	7	0.2
HW	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	2	0.0
NNW	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0	1	0.0	0	0.0	3	0.1
							0	0.0	1	0.0	0	0.0	0	0.0	1	0.0
	0	0.0	1	0.0	25	0.6	36	0.8	70	1.6	38	0.9	20	0.5	190	4.4

MEAN WIND SPEED: 15.7
MISSING: 0

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)																
0.0-0.5			0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT	
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	35	0.8	75	1.7	61	1.4	18	0.4	5	0.1	194	4.5
NNE	0	0.0	4	0.1	21	0.5	73	1.7	64	1.5	14	0.3	2	0.0	178	4.2
NE	0	0.0	4	0.1	26	0.6	55	1.3	50	1.2	4	0.1	0	0.0	139	3.2
ENE	0	0.0	4	0.1	18	0.4	57	1.3	25	0.6	0	0.0	0	0.0	104	2.4
E	0	0.0	4	0.1	30	0.7	48	1.1	20	0.5	3	0.1	0	0.0	105	2.4
ESE	0	0.0	4	0.1	14	0.3	21	0.5	29	0.7	13	0.3	3	0.1	84	2.0
SE	0	0.0	3	0.1	22	0.5	40	0.9	64	1.5	52	1.2	48	1.1	229	5.3
SSE	0	0.0	10	0.2	47	1.1	61	1.4	131	3.1	76	1.8	36	0.8	361	8.4
S	0	0.0	7	0.2	55	1.3	88	2.1	135	3.1	39	0.9	12	0.3	336	7.8
SSW	0	0.0	9	0.2	50	1.2	97	2.3	146	3.4	67	1.6	25	0.6	394	9.2
SW	0	0.0	4	0.1	41	1.0	115	2.7	149	3.5	58	1.4	14	0.3	381	8.9
WSW	0	0.0	4	0.1	32	0.7	107	2.5	154	3.6	38	0.9	7	0.2	342	8.0
W	0	0.0	3	0.1	38	0.9	96	2.2	138	3.2	69	1.6	26	0.6	370	8.6
WNW	0	0.0	1	0.0	32	0.7	69	1.6	80	1.9	91	2.1	57	1.3	330	7.7
NW	0	0.0	1	0.0	16	0.4	67	1.6	174	4.1	123	2.9	77	1.8	458	10.7
NNW	0	0.0	4	0.1	23	0.5	79	1.8	108	2.5	53	1.2	17	0.4	284	6.6
	0	0.0	66	1.5	500	11.7	1148	26.8	1528	35.6	718	16.7	329	7.7	4289	100.0
MEAN WIND SPEED: 14.7																
															MISSING HOURS: 55	

MEAN WIND SPEED: 14.7

MISSING HOURS: 55

ARTIFICIAL ISLAND 1/02- 6/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS
WIND: 300 FT
DELTA T: (300-33FT)

DIRECTION VS SPEED ONLY

WIND SPEED GROUPS (MPH)																
0.0-0.5		0.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		GE 24.6		SUM PERCENT		
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	35	0.8	75	1.7	61	1.4	18	0.4	5	0.1	194	4.5
NNE	0	0.0	4	0.1	21	0.5	73	1.7	64	1.5	14	0.3	2	0.0	178	4.1
NE	0	0.0	4	0.1	26	0.6	55	1.3	50	1.2	4	0.1	0	0.0	139	3.2
ENE	0	0.0	4	0.1	18	0.4	57	1.3	25	0.6	0	0.0	0	0.0	104	2.4
E	0	0.0	4	0.1	30	0.7	48	1.1	20	0.5	3	0.1	0	0.0	105	2.4
ESE	0	0.0	4	0.1	14	0.3	21	0.5	29	0.7	13	0.3	3	0.1	84	2.0
SE	0	0.0	3	0.1	22	0.5	40	0.9	64	1.5	52	1.2	48	1.1	229	5.3
SSE	0	0.0	10	0.2	47	1.1	61	1.4	131	3.1	76	1.8	36	0.8	361	8.4
S	0	0.0	7	0.2	55	1.3	88	2.1	135	3.1	39	0.9	12	0.3	336	7.8
SSW	0	0.0	9	0.2	50	1.2	97	2.3	146	3.4	67	1.6	25	0.6	394	9.2
SW	0	0.0	4	0.1	41	1.0	115	2.7	149	3.5	59	1.4	14	0.3	382	8.9
WSW	0	0.0	4	0.1	32	0.7	107	2.5	154	3.6	38	0.9	7	0.2	342	8.0
W	0	0.0	3	0.1	38	0.9	96	2.2	138	3.2	70	1.6	26	0.6	371	8.6
WNW	0	0.0	1	0.0	32	0.7	69	1.6	80	1.9	91	2.1	57	1.3	330	7.7
NW	0	0.0	1	0.0	16	0.4	68	1.6	174	4.1	123	2.9	77	1.8	459	10.7
NNW	0	0.0	4	0.1	23	0.5	79	1.8	108	2.5	53	1.2	17	0.4	284	6.6
	0	0.0	66	1.5	500	11.6	1149	26.8	1528	35.6	720	16.8	329	7.7	4292	100.0

MEAN WIND SPEED: 14.7

MISSING HOURS: 52

APPENDIX B

MPC DATA

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

APPENDIX F: Maximum Permissible Concentration (MPC) Values - Liquid Effluents

The following radionuclide concentrations were obtained from 10 CFR 20 Appendix B, Table II, Column 2 as revised January 1, 1991

Table F-1: Maximum Permissible Concentrations

Element	Isotope	Soluble Conc ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Actinium (89)	Ac-227	2E-6	3E-4
	Ac-228	9E-5	9E-5
Americium (95)	Am-241	4E-6	3E-5
	Am-242m	4E-6	9E-5
	Am-242	1E-4	1E-4
	Am-243	4E-6	3E-5
	Am-244	5E-3	5E-3
Antimony (51)	Sb-122	3E-5	3E-5
	Sb-124	2E-5	2E-5
	Sb-125	1E-4	1E-4
Arsenic (33)	As-73	5E-4	5E-4
	As-74	5E-5	5E-5
	As-76	2E-5	2E-5
	As-77	8E-5	8E-5
Astatine (85)	At-211	2E-6	7E-5
Barium (56)	Ba-131	2E-4	2E-4
	Ba-140	3E-5	2E-5
Berkelium (97)	Bk-249	6E-4	6E-4
	Bk-250	2E-4	2E-4
Beryllium (4)	Be-7	2E-3	2E-3
Bismuth (83)	Bi-206	4E-5	4E-5
	Bi-207	6E-5	6E-5
	Bi-210	4E-5	4E-5
	Bi-212	4E-4	4E-4
Bromine (35)	Br-82	3E-4	4E-5
Cadmium (48)	Cd-109	2E-4	2E-4
	Cd-115m	3E-5	3E-5
	Cd-115	3E-5	4E-5
Calcium (20)	Ca-45	9E-6	2E-4
	Ca-47	5E-5	3E-5
Californium (98)	Cf-249	4E-6	2E-5
	Cf-250	1E-5	3E-5
	Cf-251	4E-6	3E-5
	Cf-252	7E-6	7E-6
	Cf-253	1E-4	1E-4
	Cf-254	1E-7	1E-7

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

Table F-1 (Continued)

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Carbon (6)	C-14	8E-4	-----
Cerium (58)	Ce-141	9E-5	9E-5
	Ce-143	4E-5	4E-5
	Ce-144	1E-5	1E-5
Cesium (55)	Cs-131	2E-3	9E-4
	Cs-134m	6E-3	1E-3
	Cs-134	9E-6	4E-5
	Cs-135	1E-4	2E-4
	Cs-136	9E-5	6E-5
	Cs-137	2E-5	4E-5
Chlorine (17)	Cl-36	8E-5	6E-5
	Cl-38	4E-4	4E-4
Chromium (24)	Cr-51	2E-3	2E-3
Cobalt (27)	Co-57	5E-4	4E-4
	Co-58m	3E-3	2E-3
	Co-58	1E-4	9E-5
	Co-60	5E-5	3E-5
Copper (29)	Cu-64	3E-4	2E-4
Curium (96)	Cm-242	2E-5	2E-5
	Cm-243	5E-6	2E-5
	Cm-244	7E-6	3E-5
	Cm-245	4E-6	3E-5
	Cm-246	4E-6	3E-5
	Cm-247	4E-6	2E-5
	Cm-248	4E-7	1E-6
	Cm-249	2E-3	2E-3
Dysprosium (66)	Dy-165	4E-4	4E-4
	Dy-166	4E-5	4E-5
Einsteinium (99)	Es-253	2E-5	2E-5
	Es-254m	2E-5	2E-5
	Es-254	1E-5	1E-5
	Es-255	3E-5	3E-5
Erbium (68)	Er-169	9E-5	9E-5
	Er-171	1E-4	1E-4
Europium (63)	Eu-152 (9.2 hrs)	6E-5	6E-5
	Eu-152 (13 yrs)	8E-5	8E-5
	Eu-154	2E-5	2E-5
	Eu-155	2E-4	2E-4
Fermium (100)	Fm-254	1E-4	1E-4
	Fm-255	3E-5	3E-5
	Fm-256	9E-7	9E-7

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

Table F-1 (Continued)

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Fluorine (9)	F-18	8E-4	5E-4
Gadolinium (64)	Gd-153	2E-4	2E-4
	Gd-159	8E-5	8E-5
Gallium (31)	Ga-72	4E-5	4E-5
Germanium (32)	Ge-71	2E-3	2E-3
Gold (79)	Au-196	2E-4	1E-4
	Au-198	5E-5	5E-5
	Au-199	2E-4	2E-4
Hafnium (72)	Hf-181	7E-5	7E-5
Holmium (67)	Ho-166	3E-5	3E-5
Hydrogen (3)	H-3	3E-3	3E-3
Indium (49)	In-113m	1E-3	1E-3
	In-114m	2E-5	2E-5
	In-115m	4E-4	4E-4
	In-115	9E-5	9E-5
Iodine (53)	I-125	2E-7	2E-4
	I-126	3E-7	9E-5
	I-129	6E-8	2E-4
	I-131	3E-7	6E-5
	I-132	8E-6	2E-4
	I-133	1E-6	4E-5
	I-134	2E-5	6E-4
	I-135	4E-6	7E-5
Iridium (77)	Ir-190	2E-4	2E-4
	Ir-192	4E-5	4E-5
	Ir-194	3E-5	3E-5
Iron (26)	Fe-55	8E-4	2E-3
	Fe-59	6E-5	5E-5
Lanthanum (57)	La-140	2E-5	2E-5
Lead (82)	Pb-203	4E-4	4E-4
	Pb-210	1E-7	2E-4
	Pb-212	2E-5	2E-5
Lutetium (71)	Lu-177	1E-4	1E-4
Manganese (25)	Mn-52	3E-5	3E-5
	Mn-54	1E-4	1E-4
	Mn-56	1E-4	1E-4
Mercury (80)	Hg-197m	2E-4	2E-4
	Hg-197	3E-4	5E-4
	Hg-203	2E-5	1E-4
Molybdenum (42)	Mo-99	2E-4	4E-5

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

Table F-1 (Continued)

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Neodymium (60)	Nd-144	7E-5	8E-5
	Nd-147	6E-5	6E-5
	Nd-149	3E-4	3E-4
Neptunium (93)	Np-237	3E-6	3E-5
	Np-239	1E-4	1E-4
Nickel (28)	Ni-59	2E-4	2E-3
	Ni-63	3E-5	7E-4
	Ni-65	1E-4	1E-4
Niobium (41)	Nb-93m	4E-4	4E-4
	Nb-95	1E-4	1E-4
	Nb-97	9E-4	9E-4
Osmium (76)	Os-185	7E-5	7E-5
	Os-191m	3E-3	2E-3
	Os-191	2E-4	2E-4
	Os-193	6E-5	5E-5
Palladium (46)	Pd-103	3E-4	3E-4
	Pd-109	9E-5	7E-5
Phosphorus (15)	P-32	2E-5	2E-5
Platinum (78)	Pt-191	1E-4	1E-4
	Pt-193m	1E-3	1E-3
	Pt-193	9E-4	2E-3
	Pt-197m	1E-3	9E-4
	Pt-197	1E-4	1E-4
Plutonium (94)	Pu-238	5E-6	3E-5
	Pu-239	5E-6	3E-5
	Pu-240	5E-6	3E-5
	Pu-241	2E-4	1E-3
	Pu-242	5E-6	3E-5
	Pu-243	3E-4	3E-4
Polonium (84)	Po-210	7E-7	3E-5
Potassium (19)	K-42	3E-4	2E-5
Praseodymium (59)	Pr-142	3E-5	3E-5
	Pr-143	5E-5	5E-5
Promethium (61)	Pm-147	2E-4	2E-4
	Pm-149	4E-5	4E-5
Protactinium (91)	Pa-230	2E-4	2E-4
	Pa-231	9E-7	2E-5
	Pa-233	1E-4	1E-4

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

Table F-1 (Continued)

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Radium (88)	Ra-223	7E-7	4E-6
	Ra-224	2E-6	5E-6
	Ra-226	3E-8	3E-5
	Ra-228	3E-8	3E-5
Rhenium (75)	Re-183	6E-4	3E-4
	Re-186	9E-5	5E-5
	Re-187	3E-3	2E-3
	Re-188	6E-5	3E-5
Rhodium (45)	Rh-103m	1E-2	1E-2
	Rh-105	1E-4	1E-4
Rubidium (37)	Rb-86	7E-5	2E-5
	Rb-87	1E-4	2E-4
Ruthenium (44)	Ru-97	4E-4	3E-4
	Ru-103	8E-5	8E-5
	Ru-105	1E-4	1E-4
	Ru-106	1E-5	1E-5
Samarium (62)	Sm-147	6E-5	7E-5
	Sm-151	4E-4	4E-4
	Sm-153	8E-5	8E-5
Scandium (21)	Sc-46	4E-5	4E-5
	Sc-47	9E-5	9E-5
	Sc-48	3E-5	3E-5
Selenium (34)	Se-75	3E-4	3E-4
Silicon (14)	Si-31	9E-4	2E-4
Silver (47)	Ag-105	1E-4	1E-4
	Ag-110m	3E-5	3E-5
	Ag-111	4E-5	4E-5
Sodium (11)	Na-22	4E-5	3E-5
	Na-24	2E-4	3E-5
Strontium (38)	Sr-85m	7E-3	7E-3
	Sr-85	1E-4	2E-4
	Sr-89	3E-6	3E-5
	Sr-90	3E-7	4E-5
	Sr-91	7E-5	5E-5
	Sr-92	7E-5	6E-5
Sulfur (16)	S-35	6E-5	3E-4
Tantalum (73)	Ta-182	4E-5	4E-5

2002 SGS AND HCGS RADIOACTIVE EFFLUENTS RELEASE REPORT

Table F-1 (Continued)

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
Technetium (43)	Tc-96m	1E-2	1E-2
	Tc-96	1E-4	5E-5
	Tc-97m	4E-4	2E-4
	Tc-97	2E-3	8E-4
	Tc-99m	6E-3	3E-3
	Tc-99	3E-4	2E-4
Tellurium (52)	Te-125m	2E-4	1E-4
	Te-127m	6E-5	5E-5
	Te-127	3E-4	2E-4
	Te-129m	3E-5	2E-5
	Te-129	8E-4	8E-4
	Te-131m	6E-5	4E-5
	Te-132	3E-5	2E-5
Terbium (65)	Tb-160	4E-5	4E-5
Thallium (81)	Tl-200	4E-4	2E-4
	Tl-201	3E-4	2E-4
	Tl-202	1E-4	7E-5
	Tl-204	1E-4	6E-5
Thorium (90)	Th-227	2E-5	2E-5
	Th-228	7E-6	1E-5
	Th-230	2E-6	3E-5
	Th-231	2E-4	2E-4
	Th-232	2E-6	4E-5
	Th-natural	2E-6	2E-5
	Th-234	2E-5	2E-5
Thulium (69)	Tm-170	5E-5	5E-5
	Tm-171	5E-4	5E-4
Tin (50)	Sn-113	9E-5	8E-5
	Sn-124	2E-5	2E-5
Tungsten (74)	W-181	4E-4	3E-4
	W-185	1E-4	1E-4
	W-187	7E-5	6E-5
Uranium (92)	U-230	5E-6	5E-6
	U-232	3E-5	3E-5
	U-233	3E-5	3E-5
	U-234	3E-5	3E-5
	U-235	3E-5	3E-5
	U-236	3E-5	3E-5
	U-238	4E-5	4E-5
	U-240	3E-5	3E-5
	U-natural	3E-5	3E-5

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Table F-1 (Continued)

Element	Isotope	Soluble Conc. (μCi/ml)	Insoluble Conc. (μCi/ml)
Vanadium (23)	V-48	3E-5	3E-5
Ytterbium (70)	Yb-175	1E-4	1E-4
Yttrium	Y-90	2E-5	2E-5
	Y-91m	3E-3	3E-3
	Y-91	3E-5	3E-5
	Y-92	6E-5	6E-5
Zinc (30)	Y-93	3E-5	3E-5
	Zn-65	1E-4	2E-4
	Zn-69m	7E-5	6E-5
	Zn-69	2E-3	2E-3
Zirconium (40)	Zr-93	8E-4	8E-4
	Zr-95	6E-5	6E-5
	Zr-97	2E-5	2E-5
Any single radio-nuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radio - active half-life greater than 2 hours		3E-6	3E-6
Any single radio- nuclide not listed above, which decays by alpha emission or spontaneous fission.		3E-8	3E-8

Notes:

1. If the identity of any radionuclide is not known, the limiting values for purposes of this table shall be: 3E-8 μCi/ml.
2. If the identity and concentration of each radionuclide are known, the limiting values should be derived as follows: Determine, for each radionuclide in the mixture, the ratio between the quantity present in the mixture and the limit otherwise established in Appendix B for the specific radionuclide not in a mixture. The sum of such ratios for all the radionuclides in the mixture may not exceed "1" (i.e. "unity").