

PSEG NUCLEAR LLC

**2013 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 2013

INTRODUCTION

This report, SGS-RERR-62/HCGS-RERR-36, summarizes information pertaining to the releases of radioactive materials in liquid, gaseous and solid form from the Salem Generating Station (SGS) and the Hope Creek Generating Station (HCGS) for the period January 1, 2013, to December 31, 2013.

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 1180 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 1177 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 is a General Electric (GE) Boiling Water Reactor that has an up rated core thermal power of 3840 MWt and an approximate net electrical output of 1213 MWe. The HCGS achieved initial criticality on June 28, 1986 and went into commercial operation on December 20, 1986.

The electrical energy (net) output for 2013 was as follows:

- 9,024,158 megawatt-hours of electrical energy (net) were generated by Salem Unit 1,
- 10,262,831 megawatt-hours of electrical energy (net) were generated by Salem Unit 2,
- 9,112,676 megawatt-hours of electrical energy (net) were generated by Hope Creek Generating Station.

This report is prepared in the format of Regulatory Guide 1.21, revision 1, 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. The 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 ODCM limits are described in detail within this report. In addition, summaries describing methods for measuring and determining associated approximations of total radioactivity are included in this report.

PART A. 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 and 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 Units 1 and 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.

Notwithstanding the limits above, the estimated annual external dose from gaseous effluent to any individual in an unrestricted area should not exceed 5 mrem, as set forth in 10CFR50, Appendix I. In addition, the 10CFR50 Appendix I ALARA requirement for gaseous effluent will have been met if it is demonstrated that the estimated annual external dose from gaseous effluent to any individual in unrestricted areas does not exceed 5 mrem to the total body or 15 mrem to the skin.

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 microcurie 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 Maximum Permissible Concentration (MPC) 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, Iodine-131, Iodine-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 microcurie 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 the Salem and Hope Creek Generating Stations are not based upon average energy. Therefore this section is not applicable to the Salem and Hope Creek Generating Stations.

4.0 MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

Radionuclides that are measured at concentrations below the ODCM-specified lower limit of detection (LLD) are considered present. A radionuclide for which no activity was detected while meeting the required LLD is considered absent.

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, and Detergent Drain Tanks.
- For Salem, releases from the Service Water Drums, which are collected and disposed via the Chemical Waste Basin, 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 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. The total liquid

activity discharged is determined by multiplying specific activities from the analyses by the volume of effluent discharged to the environment.

The detection requirements of Table 4.11-1 (SGS) and Table 4.11.1.1.1-1 (HCGS) of the ODCM were achieved.

4.2 Gaseous Effluents

Salem Units 1 and 2:

Gaseous effluent streams at Salem Generating Stations 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, radioiodine and tritium.

The detection requirements of Table 4.11-2 of the ODCM were achieved or exceeded.

Continuous Mode gaseous releases are quantified by routine sampling and isotopic analyses of the plant vent as required by the ODCM. Specific activities for detected isotopes 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 noble gas releases are quantified by sampling each decay tank or containment atmosphere prior to release. The total activity in a batch release was determined by multiplying the specific activities for detected isotopes by the total volume of the discharged gas in that batch release.

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 total activity discharged is determined by multiplying the "specific activity" by the volume of effluent discharged while the channel was in an alarm state.

Hope Creek:

Gaseous effluent streams at Hope Creek Generating Station 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 planned gaseous effluent releases. The NPV and SPV are continuously monitored for iodine, particulates and noble gases. These monitors have fixed particulate and charcoal filters. The particulate filters and charcoal cartridges are replaced and

analyzed weekly. These analyses are performed on a multi-channel analyzer. The NPV and SPV are also 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 taken weekly.

The detection requirements of Tables 4.11.2.1.2-1 of the ODCM were achieved or exceeded.

Batch Mode noble gas releases (i.e. primary containment purge) are quantified by pre-release sampling and isotopic analysis. The total radioactivity released was estimated by multiplying the specific activities for detected isotopes by the containment volume.

4.3 Estimated Total Error

The estimated total error reported for continuous and batch liquid releases for all three plants is within 27%. The estimated total error for continuous and batch gaseous releases, and solid waste is within 35%.

These errors are primarily due to variability of waste stream flow rates and changes in isotopic distributions of waste streams between sampling periods. Error estimates for releases where sample activity is below the detectable concentration levels are not included because error estimates at the LLD are not defined.

5.0 BATCH RELEASES

Gaseous and liquid effluent batch releases are summarized in the tables.

6.0 UNPLANNED RELEASES

There were no unplanned releases from Salem Unit 2 or the Hope Creek Generating Station in 2013. Salem Unit 1 has a pathway to the environment because of a historic leak in the spent fuel pool to groundwater. The only plant-related radioactive material detected in this groundwater is tritium and the quantity making it to the Delaware River is conservatively estimated to be 0.08 curies year.

7.0 ELEVATED RADIATION MONITOR RESPONSES

During this reporting period, none of the effluent radiation monitors elicited an elevated response during the discharge of liquid and gaseous effluent from either of the Salem Units 1 and 2 or from the Hope Creek Generating Station.

8.0 MODIFICATION TO PREVIOUS RADIOACTIVE EFFLUENT RELEASE REPORTS –ERRATA DATA SECTION

The PSEG corrective action program identifier is in parenthesis.

Differences in Carbon 14 dose between 2011 and 2012 ARERRs. (70162366)

In the 2011 ARERR, the C14 dose at the site boundary was 1.36 mrem Total Body and 6.80 for organ dose using a hypothetical child receptor using garden produce, leafy vegetables milk and meat pathways. In the 2012 report, the calculated dose for Total Body was 0.0173 mrem using an adult immersion, ground deposition and inhalation pathways. No explanation for the change in assumptions and pathways is in the 2012 report. The requirement to include C14 in the effluent reports is relatively new: the 2012 report was the third annual report to include C14. The receptors and pathways changed because of industry knowledge and experience.

Error in the 2010 ARERR. (80106424)

The basis document for the data in Table 5A and on the Liquid Releases HGCGS) graph on page 19 of the 2010 ARERR had an incorrect entry for the 4th quarter from Hope Creek. This incorrect entry inflated the total body and organ doses. This error carried over into the 2011 and 2012 graphical display of Hope Creek's liquid doses. The tables for Hope Creek and the Site should read:

Hope Creek Generating Station					
Liquid Effluent Parameter	1Q2010	2Q2010	3Q2010	4Q2010	Annual
Total Body Dose Limit (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Maximum Total Body Dose (mrem)	1.33E-05	3.22E-06	1.28E-05	3.51E-05	4.76E-05
% Dose Limit	9.77E-06	2.14E-04	8.51E-04	2.34E-03	1.59E-03
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	2.41E-07	1.30E-05	4.02E-05	1.33E-04	1.05E-04
% Dose Limit	4.82E-06	2.60E-04	8.03E-04	2.66E-03	1.05E-03
Salem-Hope Creek Site Total					
Liquid Effluent Parameter	1Q2010	2Q2010	3Q2010	4Q2010	Annual
Total Body Dose Limit (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Maximum Total Body Dose (mrem)	3.21E-05	2.69E-05	2.82E-05	6.30E-05	1.15E-04
% Dose Limit	2.14E-03	1.79E-3	1.88E-03	4.20E-03	4.98E-03
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	5.22E-05	1.14E-03	8.64E-05	2.16E-04	1.49E-03
% Dose Limit	1.04E-03	2.26E-03	1.73E-03	3.151E-03	1.49E-02

The graph on page 27 has the corrected data.

Carbon 14 doses reported in 2012 ARERR (70157233)

In the 2012 ARERR, the carbon 14 doses for ODCM site boundary and the nearest resident were not calculated because the dominant pathway - vegetation - does not exist at these locations. The only pathway for these locations is inhalation, a minor contributor in relation to the other pathways. The carbon 14 doses were reported in the ARERR at these locations as 0, but should have been stated as either not calculated, or calculated and calculated values put into the tables. The inclusion of C14 inhalation doses does not change the location of (or radiological impact to) the 40CFR190 critical receptor as reported in the 2012 ARERR. The team assembling and calculating the doses for the 2012 ARERR knew that the inhalation pathway dose would be trivial. Upon re-reading later, using zero is not technically correct. The doses have been calculated, and the highest inhalation dose, 0.013 mrem is about 3% of the dose calculated for the highest receptor of 0.456 mrem.

Tritium releases and well AA - V (701548440)

In 2013, PSEG has made the assumption that the tritium in wells close to the site boundary has made its way to the Delaware River. The conservative dose assessment and the quantity of tritium does not affect the previous reported quantities, being that the results of the groundwater tritium are approximately 0.01% or less of the three significant figures in the reported results.

PART B. GASEOUS EFFLUENTS

See Summary Tables.

PART C. LIQUID EFFLUENTS

See Summary Tables.

PART D. SOLID WASTE

See Summary Tables.

PART E. RADIOLOGICAL IMPACT ON MAN

1.0 EFFLUENT DOSES:

The estimated doses from liquid and gaseous effluent represent the maximum potential radiation dose for a member of the general public. The total body and organ doses from gaseous effluent were calculated using the GASPAR computer program included in the NRC Dose computer program package (version 2.3.20). Estimated doses from liquid effluent were calculated using the methodology described in the Salem and Hope Creek ODCMs. The methods used to determine gaseous and liquid doses are consistent with the methods described in Salem and Hope Creek ODCMs and in Regulatory Guide 1.109.

The doses presented in the tables below represent calculations for the four quarters of the 12-month reporting interval. The radiological impacts from liquid and gaseous effluent discharges from the Salem Unit 1 and 2 and the Hope Creek Generating Station are presented in Tables below, respectively, and demonstrate compliance with applicable regulatory limits. Dose limit values presented in bold font are regulatory limits. The quarterly doses must not exceed the quarterly limit in any quarter and the summation of two or more quarterly doses must not exceed the annual dose limit.

Doses from Liquid Effluent

Quarterly doses from liquid effluent were calculated using the methodology described in the Salem and Hope Creek ODCMs. Usage factors and dose conversion factors used in the liquid dose calculations are those presented in the Salem and Hope Creek ODCMs.

Doses from Liquid Effluent

Salem Unit 1					
Liquid Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Total Body Dose Limit (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Maximum Total Body Dose (mrem)	7.68E-06	1.78E-05	1.55E-06	2.04E-06	2.91E-05
% Dose Limit	5.12E-04	1.19E-03	1.03E-04	1.36E-04	9.69E-04
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	1.08E-05	6.35E-05	2.45E-06	4.80E-06	8.15E-05
% Dose Limit	2.16E-04	1.27E-03	4.89E-05	9.59E-05	8.15E-04
Salem Unit 2					
Liquid Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Total Body Dose Limit (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Maximum Total Body Dose (mrem)	8.90E-06	4.13E-06	2.23E-06	3.68E-07	1.56E-05

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% Dose Limit	5.94E-04	2.75E-04	1.49E-04	2.45E-05	5.21E-04
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	1.19E-05	1.42E-05	3.30E-06	6.54E-07	3.01E-05
% Dose Limit	2.37E-04	2.85E-04	6.60E-05	1.31E-05	3.01E-04
Hope Creek Generating Station					
Liquid Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Total Body Dose Limit (mrem)	1.50E+00	1.50E+00	1.50E+00	1.50E+00	3.00E+00
Maximum Total Body Dose (mrem)	1.56E-06	5.95E-06	5.73E-06	1.07E-05	2.39E-05
% Dose Limit	1.04E-04	3.96E-04	3.82E-04	7.13E-04	7.98E-04
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	2.09E-06	1.09E-05	1.02E-05	6.40E-05	8.71E-05
% Dose Limit	4.19E-05	2.17E-04	2.03E-04	1.28E-03	8.71E-04
Salem-Hope Creek Site Total					
Liquid Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Total Body Dose Limit (mrem)	4.50E+00	4.50E+00	4.50E+00	4.50E+00	9.00E+00
Maximum Total Body Dose (mrem)	1.81E-05	2.79E-05	9.51E-06	1.31E-05	6.86E-05
% Dose Limit	4.03E-04	6.20E-04	2.11E-04	2.91E-04	7.62E-04
Organ Dose Limit (mrem)	1.50E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01
Maximum Organ Dose (mrem)	2.48E-05	8.86E-05	1.60E-05	6.95E-05	1.99E-04
% Dose Limit	1.65E-04	5.91E-04	1.06E-04	4.63E-04	6.62E-04

Doses from Gaseous Effluent

The individual doses from gaseous effluent are calculated for (i) the controlling locations described in the Salem and Hope Creek ODCMs and (ii) real receptors and pathways identified by the 2013 Land Use Census (LUC). The receptor locations and active (real) exposure pathways at each location as identified in the 2013 LUC are summarized below. Figures 1 and 2 provide visual representations of site meteorology and receptor locations in relation to the Salem-Hope Creek site.

<u>Description</u> Site Boundary	<u>Location</u> N sector ^a	<u>Basis</u> ODCM	<u>Active Exposure Pathways</u>
Dairy	4.9mi W	ODCM and 2013 LUC	Plume immersion Ground deposition Inhalation Milk ingestion
Resident ^b	3.7mi NW	2013 LUC	Plume immersion Ground deposition Inhalation

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Resident ^c	4.4mi WSW	2013 LUC	Plume immersion Ground deposition Inhalation Vegetable ingestion
Meat ^d	4.2mi NNE	2013 LUC	Plume immersion Ground deposition Inhalation Meat ingestion
Meat ^e	4.6mi SW	2013 LUC	Plume immersion Ground deposition Inhalation Meat ingestion Vegetable ingestion

^a 0.5 mile from Hope Creek Generating Station and 0.83 mile from the Salem Units; hypothetical receptor.

^b Nearest resident (real receptor) in predominant downwind sector as identified in 2013 LUC. In 2013, this receptor location had the highest atmospheric dispersion factor values among the "nearest resident" locations for each sector.

^c Nearest resident (real receptor) with a real garden as identified in the 2013 LUC.

^d Nearest meat animal location (real receptor) as identified in the 2013 LUC.

^e Meat animal location with a garden (real receptor) as identified in the 2013 LUC.

The quarterly doses from gaseous effluent were calculated using the average quarterly meteorological dispersion factors determined from site meteorological data recorded during 2013. The 2013 quarterly atmospheric dispersion factors used in the dose calculations are summarized below.

<u>Location</u>	<u>Q</u>	<u>Undepleted X/Q</u>	<u>Depleted X/Q</u>	<u>D/Q</u>
HCGS SB, 0.5mi N	1	8.20E-07	7.50E-07	7.40E-09
	2	2.00E-06	1.80E-06	1.40E-08
	3	2.00E-06	1.80E-06	1.90E-08
	4	1.70E-06	1.60E-06	9.90E-09
SGS SB, 0.83mi N	1	3.80E-07	3.40E-07	3.20E-09
	2	9.40E-07	8.30E-07	6.20E-09
	3	9.70E-07	8.60E-07	8.20E-09
	4	7.90E-07	7.00E-07	4.30E-09
Dairy, 4.9mi W	1	3.70E-08	2.80E-08	8.70E-11
	2	5.40E-08	4.00E-08	1.50E-10

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	3	4.80E-08	3.60E-08	7.20E-11
	4	1.20E-07	8.90E-08	1.20E-10
Resident, 3.7mi NW	1	1.10E-07	8.50E-08	4.20E-10
	2	1.50E-07	1.20E-07	8.50E-10
	3	5.60E-08	4.40E-08	2.50E-10
	4	1.40E-07	1.10E-07	3.80E-10
Resident, 4.4mi	1	5.10E-08	3.80E-08	1.30E-10
	2	5.50E-08	4.20E-08	2.30E-10
	3	8.20E-08	6.20E-08	1.50E-10
	4	9.30E-08	7.10E-08	1.60E-10
Meat, 4.2mi NNE	1	3.20E-08	2.40E-08	1.20E-10
	2	8.10E-08	6.20E-08	3.00E-10
	3	8.80E-08	6.70E-08	4.30E-10
	4	8.40E-08	6.40E-08	3.30E-10
Meat, 4.6mi SW	1	4.70E-08	3.60E-08	1.50E-10
	2	5.80E-08	4.30E-08	2.00E-10
	3	8.30E-08	6.30E-08	2.20E-10
	4	1.10E-07	8.30E-08	3.40E-10



Figure 1: Locations of Dose Calculation Receptors with Wind Rose Overlay

Note: Wind rose depicts fraction of time wind transports gaseous effluents towards each of the sixteen compass sectors..

Doses from Gaseous Effluent

Salem Unit 1					
Gaseous Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Limit for Gamma Air Dose (mrad) from Noble Gases	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Gamma Air Dose (mrad)	5.66E-06	1.49E-04	7.41E-06	3.59E-06	1.66E-04
% Dose Limit	1.13E-04	2.98E-03	1.48E-04	7.18E-05	1.66E-03
Limit for Beta Air Dose (mrad) for Noble Gases	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
Maximum Beta Air Dose (mrad)	2.43E-06	4.36E-04	2.87E-06	1.27E-06	4.43E-04
% Dose Limit	2.43E-05	4.36E-03	2.87E-05	1.27E-05	2.21E-03
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14, and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM location: Site Boundary (0.8 mile N)	5.90E-05	2.56E-04	8.42E-05	1.85E-04	5.84E-04
% Dose Limit	7.87E-04	3.42E-03	1.12E-03	2.46E-03	3.89E-03
ODCM location: Dairy (4.9 miles W)	9.70E-03	1.43E-02	1.29E-02	3.22E-02	6.91E-02
% Dose Limit	1.29E-01	1.91E-01	1.72E-01	4.29E-01	4.61E-01
Nearest Resident (3.7 miles NW)	1.71E-05	4.09E-05	4.86E-06	3.28E-05	9.57E-05
% Dose Limit	2.28E-04	5.46E-04	6.48E-05	4.37E-04	6.38E-04
Maximum dose to a resident with a garden (4.4 miles WSW)	1.45E-02	1.58E-02	2.39E-02	2.71E-02	8.13E-02
% Dose Limit	1.93E-01	2.11E-01	3.19E-01	3.61E-01	5.42E-01
Resident-meat animal location (4.2 miles NNE)	1.38E-03	2.11E-01	3.87E-03	3.69E-03	2.20E-01
% Dose Limit	1.84E-02	4.70E-02	5.16E-02	4.92E-02	1.47E+00
Maximum dose at resident-meat animal location with a garden (4.6 miles SW)	1.54E-02	1.92E-02	2.79E-02	3.69E-02	9.94E-02
% Dose Limit	2.06E-01	2.56E-01	3.71E-01	4.93E-01	6.63E-01

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Salem Unit 2					
Gaseous Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Limit for Gamma Air Dose (mrad) from Noble Gases	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Gamma Air Dose (mrad)	2.48E-06	8.39E-06	1.40E-05	2.01E-05	4.45E-05
% Dose Limit	4.96E-05	1.68E-04	2.80E-04	1.01E-04	4.45E-04
Limit for Beta Air Dose (mrad) for Noble Gases	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
Maximum Beta Air Dose (mrad)	9.40E-07	3.16E-06	5.70E-06	1.03E-05	2.01E-05
% Dose Limit	9.40E-06	3.16E-05	5.70E-05	1.03E-04	1.01E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14, and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM location: Site Boundary (0.8 mile N)	6.48E-05	9.99E-05	1.22E-04	2.81E-04	5.68E-04
% Dose Limit	8.63E-04	1.33E-03	1.63E-03	3.75E-03	3.78E-03
ODCM location: Dairy (4.9 miles W)	1.10E-02	1.63E-02	1.46E-02	3.65E-02	7.84E-02
% Dose Limit	1.47E-01	2.17E-01	1.95E-01	4.87E-01	5.23E-01
Nearest Resident (3.7 miles NW)	1.88E-05	1.59E-05	7.03E-06	4.89E-05	9.06E-05
% Dose Limit	2.50E-04	2.12E-04	9.38E-05	6.52E-04	6.04E-04
Maximum dose to a resident with a garden (4.4 miles WSW)	1.65E-02	1.80E-02	2.71E-02	3.08E-02	9.24E-02
% Dose Limit	2.20E-01	2.40E-01	3.61E-01	4.11E-01	6.16E-01
Resident-meat animal location (4.2 miles NNE)	1.56E-03	4.00E-03	4.39E-03	4.19E-03	1.41E-02
% Dose Limit	2.08E-02	5.33E-02	5.85E-02	5.59E-02	9.43E-02
Maximum dose at resident-meat animal location with a garden (4.6 miles SW)	1.75E-02	2.19E-02	3.16E-02	4.19E-02	1.13E-01
% Dose Limit	2.33E-01	2.92E-01	4.22E-01	5.59E-01	7.53E-01

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Hope Creek					
Gaseous Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Limit for Gamma Air Dose (mrad) from Noble Gases	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Gamma Air Dose (mrad)	0.00E+00	9.91E-06	7.95E-06	6.11E-07	1.85E-05
% Dose Limit	0.00E+00	1.98E-04	1.59E-04	1.22E-05	1.85E-04
Limit for Beta Air Dose (mrad) for Noble Gases	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
Maximum Beta Air Dose (mrad)	0.00E+00	5.00E-06	1.27E-05	9.90E-07	1.87E-05
% Dose Limit	0.00E+00	5.00E-05	1.27E-04	9.90E-06	9.35E-05
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14, and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM location: Site Boundary (0.8 mile N)	2.30E-03	5.98E-03	9.41E-03	3.17E-03	2.09E-02
% Dose Limit	3.07E-02	7.97E-02	1.25E-01	4.23E-02	1.39E-01
ODCM location: Dairy (4.9 miles W)	1.47E-02	2.17E-02	1.95E-02	5.12E-02	1.07E-01
% Dose Limit	1.96E-01	2.90E-01	2.60E-01	6.83E-01	7.14E-01
Nearest Resident (3.7 miles NW)	2.21E-04	4.13E-04	2.27E-04	2.25E-04	1.09E-03
% Dose Limit	2.95E-03	5.51E-03	3.02E-03	3.00E-03	7.24E-03
Maximum dose to a resident with a garden (4.4 miles WSW)	2.20E-02	2.40E-02	3.61E-02	4.52E-02	1.27E-01
% Dose Limit	2.94E-01	3.20E-01	4.82E-01	6.03E-01	8.49E-01
Resident-meat animal location (4.2 miles NNE)	2.10E-03	5.37E-03	5.90E-03	9.00E-03	2.24E-02
% Dose Limit	2.80E-02	7.16E-02	7.86E-02	1.20E-01	1.49E-01
Maximum dose at resident-meat animal location with a garden (4.6 miles SW)	2.34E-02	2.91E-02	4.21E-02	6.84E-02	1.63E-01
% Dose Limit	3.12E-01	3.89E-01	5.62E-01	9.12E-01	1.09E+00

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Salem-Hope Creek Site Total					
Gaseous Effluent Parameter	1Q2013	2Q2013	3Q2013	4Q2013	Annual
Limit for Gamma Air Dose (mrad) from Noble Gases	1.50E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01
Maximum Gamma Air Dose (mrad)	8.14E-06	1.12E-03	1.96E-04	1.59E-04	7.62E-04
% Dose Limit	5.43E-05	1.12E-03	1.96E-04	1.59E-04	7.62E-04
Limit for Beta Air Dose (mrad) for Noble Gases	3.00E+01	3.00E+01	3.00E+01	3.00E+01	6.00E+01
Maximum Beta Air Dose (mrad)	3.37E-06	4.44E-04	2.13E-05	1.26E-05	4.81E-04
% Dose Limit	1.12E-05	1.48E-03	7.09E-05	4.19E-05	8.02E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14, and particulate nuclides (>8 days half-life)	2.25E+01	2.25E+01	2.25E+01	2.25E+01	4.50E+01
ODCM location: Site Boundary (0.8 mile N)	2.42E-03	6.34E-03	9.62E-03	3.64E-03	2.20E-02
% Dose Limit	1.08E-02	2.82E-02	4.27E-02	1.62E-02	4.89E-02
ODCM location: Dairy (4.9 miles W)	3.54E-02	5.23E-02	4.70E-02	1.20E-01	2.55E-01
% Dose Limit	1.57E-01	2.32E-01	2.09E-01	5.33E-01	5.66E-01
Nearest Resident (3.7 miles NW)	2.57E-04	4.70E-04	2.39E-04	3.07E-04	1.27E-03
% Dose Limit	1.14E-03	2.09E-03	1.06E-03	1.36E-03	2.83E-03
Maximum dose to a resident with a garden (4.4 miles WSW)	5.30E-02	5.78E-02	8.71E-02	1.03E-01	3.01E-01
% Dose Limit	2.36E-01	2.57E-01	3.87E-01	4.58E-01	6.69E-01
Resident-meat animal location (4.2 miles NNE)	5.04E-03	2.20E-01	1.42E-02	1.69E-02	2.56E-01
% Dose Limit	2.24E-02	9.79E-01	6.29E-02	7.50E-02	5.70E-01
Maximum dose at resident-meat animal location with a garden (4.6 miles SW)	5.63E-02	7.02E-02	1.02E-01	1.47E-01	3.75E-01
% Dose Limit	2.50E-01	3.12E-01	4.52E-01	6.54E-01	8.34E-01

As set forth in 10CFR50 Appendix I, the estimated annual external dose from gaseous effluent to any individual in an unrestricted area should not exceed 5 mrem. In addition, the 10CFR50 Appendix I ALARA requirement for gaseous effluent is met if a licensee demonstrates that the estimated annual external dose from gaseous effluent to any individual in unrestricted areas does not exceed 5 mrem to the total body or 15 mrem to the skin. Compliance to these limits is demonstrated for 2013 gaseous effluents by the calculated total body and skin doses from external exposure pathways (i.e., plume and ground deposition) at the controlling site boundary location in the north sector. The calculated total body dose and skin dose from the combined gaseous releases for the three generating stations represent less than 0.11% and less than 0.05% of the respective dose limits, which confirm that no single unit release effluent that exceeded the Appendix I dose limits. These doses (presented below) were calculated using the GASPARG computer program, which is consistent with the methods described in Regulatory Guide 1.109.

<u>Dose Parameter</u>	<u>Annual Dose</u>
Total Body Dose from Noble Gases – Site Boundary:	5.60E-03 mrem
Percent of Appendix I Annual Limit (5 mrem):	1.12E-01%
Skin Dose from Noble Gases – Site Boundary:	6.74 E-03 mrem
Percent of Appendix I Annual Limit (15 mrem):	4.49E-02%

Population doses are not required to be calculated.

1.1 Total Dose Resulting from Radioactive Effluent Releases and Radiation from Uranium Fuel Cycle Sources

An annual dose to a member of the public due to effluent releases and all other uranium fuel cycle sources presented on site was calculated as required by section 3.11.4 of the Salem and Hope Creek ODCMs. This calculation was performed to demonstrate compliance with radiation limits established in 40CFR190 and 10CFR72.104. The doses from the gaseous and liquid effluents released from Salem Unit 1, Salem Unit 2 and Hope Creek in 2013 resulted in a calculated whole body dose of 1.40E-02 mrem and an organ dose of 2.10e-02 mrem to a Member of the Public at the site boundary location designated in the ODCM. The direct radiation component was determined by comparing badges on the site boundary (5S1, 10S1, 11S1, 15S1 and 15S2) to the designated controls (3G1 and 14G1). The range of the site boundary dosimeters, with an annual dose between 43 and 51 mrad were lower than the control locations of 57 and 61. The direct radiation dose is determined by subtracting the control data from the badge data, therefore, there is no measurable direct radiation to a Member of the Public at the site boundary. The reason that the site badges are lower is that the surrounding waters lower the radon concentration and limit terrestrial radiation. Environmental dosimeters do respond to radon's gammas – as well as other, slightly radioactive materials such as rocks and soil. The site

badges have always been lower than the badges located further inland, and 2013's results are typical since before the startup of Salem Unit 1.

PSEG is currently using a TLD (CaF:Dy) to measure direct radiation, and since the site monitors have no measurable dose, the total dose to a Member of the Public at the Site boundary is 1.39E-02 mrem Total Body and 2.08E-02 mrem to any other organ.

Both doses are below the limits specified in 40 CFR 190.

40CFR190 and 10CFR72.104 restrict the total dose to members of the public due to radioactivity and radiation from uranium fuel cycle sources (including the ISFSI facility). Because the REMP environmental dosimeter data indicated that there was no contribution at the site boundary via direct radiation from the ISFSI site in 2013, compliance with the regulatory requirements for total dose was demonstrated by summing direct dose (zero), the total body doses, organ doses, and the thyroid doses from all liquid effluent and all gaseous effluent from the Salem Units 1 and 2 and the Hope Creek Generating Station. The critical receptor for the 40CFR190 total dose was a child receptor at a real resident-meat animal-garden location at 4.6 miles in the SW sector, the location of the highest dose from gaseous effluent. The total body, organ, and thyroid doses (including the estimated contributions from carbon-14) from gaseous effluent at this location were summed with the total body, organ, and thyroid doses from liquid effluents, and the resulting sums were evaluated against the respective regulatory dose limits. The total body, organ, and thyroid doses to members of the public due to radioactivity and radiation from uranium fuel cycle sources are bounded by the total dose to a child receptor at 4.6 miles in the SW sector. The table below presents the bounding 40CFR190 total doses.

40CFR190 Total Dose to a Member of the Public

Parameter	Annual Dose
40CFR190/10CFR72.104 Dose Limit: Total Body or Any Organ (mrem) Thyroid (mrem)	2.50E+01 7.50E+01
40CFR190 Total Body Dose (mrem) at 4.6mile SW % Total Body/Any Organ Dose Limit	8.46E-02 0.34%
40CFR190 Organ Dose (mrem) at 4.6mile SW % Organ Dose Limit	3.75E-01 1.50%
40CFR190 Thyroid Dose (mrem) at 4.6mile SW % Thyroid Limit	7.74E-02 0.10%

1.2 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 dose from radioactive liquid and gaseous effluents to a member of the public performing activities inside the site boundary was calculated as required by ODCM 6.9.1.8 (SGS) and 6.9.1.7 (HCGS). For the purpose of these dose calculations, an adult member of the public was assumed to be a full-time employee whose assigned duties do not involve exposure to radiation or to radioactive material (i.e., an unmonitored employee working 2000 hours in a year). The active exposure pathways to a member of the public inside the site boundary are external exposure due to plume immersion and ground deposition and inhalation of airborne radioactivity in gaseous effluent. The onsite receptor was assumed to be located 0.25 miles from the gaseous release points for Salem Units 1 and 2 and Hope Creek Generating Station. The SE sector was determined to have the highest annual atmospheric dispersion factors for an onsite location. The GASPARG computer program was used to calculate the doses. The atmospheric dispersion factors used in the dose calculations are provided below.

<u>Plant</u>	<u>Undepleted X/Q</u>	<u>Depleted X/Q</u>	<u>D/Q</u>
Salem	1.7E-05	1.6E-05	1.4E-07
Hope Creek	2.3E-06	2.1E-06	2.4E-08

For the 12-month reporting period, January 1, 2013 to December 31, 2013 the calculated site dose and percent of limit are:

Parameter	
Total Body Dose from radioactive liquid and gaseous effluents to Member of the Public Inside Site Boundary	9.73E-03 mrem
% Limit	9.73E-03

1.3 Assessment of Carbon-14 Releases

The NRC has identified carbon-14 (C-14) as a potential principal radionuclide for gaseous effluent because analytical methods for determining C-14 have improved since the publication of Revision 1 to Regulatory Guide 1.21 and, over the same period of time, the radioactive effluents from commercial nuclear power plants have decreased to the point that C-14 is likely to be a principal radionuclide in gaseous effluents (refer to Regulatory Position 1.9 in Revision 2

of Regulatory Guide 1.21). Because gaseous effluent releases from boiling water reactors (BWR) and pressurized water reactors (PWR) can contain significant quantities of C-14, the NRC has recommended that licensees evaluate C-14 as a potential principal radionuclide. Those evaluations determined that C-14 is a "principal radionuclide" in gaseous effluent from each of the three stations.

The assessment methodology used to estimate the quantity of C-14 discharged in gaseous effluent from the Salem and Hope Creek Stations involved the use of a normalized C-14 source term and scaling factors based on power generation from EPRI Technical Report 1021106. This method was selected based on guidance offered in Regulatory Guide 1.21, and incorporates dose models described in Regulatory Guide 1.109, *Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I*, and approach recommendations offered from industry peers and the NRC staff during the 20th Annual RETS-REMP Workshop San Jose, CA (June 2010).

The following assumptions are incorporated into the method:

- Only C-14 in the form of CO₂ is incorporated into vegetation through photosynthesis, which causes dose via the ingestion exposure pathways.
- The concentration of C-14 in vegetation is proportional to the concentration of C-14 in air (per equation C-8 in RG 1.109).
- 95% of C-14 released from a BWR (i.e., Hope Creek) and 30% of C-14 released from a PWR (i.e., Salem Units 1 and 2) is in the form of CO₂ (EPRI Technical Report 1021106).

Using scaling factors and 2013 power generation data, the estimated total C-14 released in 2013 was 10.3 Ci from Salem Unit 1, 11.7 Ci from Salem Unit 2, and 15.6 Ci from the Hope Creek Generating Station.

The GASPAR computer program was used to determine doses resulting from C-14 in gaseous effluent from the Salem Units and Hope Creek Generating Station. The maximum total body and organ (bone) doses from C-14 occurred for a child receptor at 4.6 mile SW. The doses from the estimated C-14 in gaseous effluents represent about 43% of the total dose from the Salem and Hope Creek site, but are less than 0.81% of the annual dose limit of 45 mrem (30 mrem per unit) as specified in the Salem and Hope Creek ODCMs (3.11.2.3).

The annual total body and organ doses due to the estimated C-14 releases in 2013 are:

Generating Station	ODCM Site Boundary ^a N		ODCM Dairy ^b 4.9mi W	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	9.02E-03	1.69E-03	6.91E-02	1.48E-02
Salem Unit 2	1.03E-02	1.93E-03	7.85E-02	1.68E-02
Hope Creek	2.89E-02	5.43E-03	1.05E-01	2.23E-02
Site Total	4.82E-02	9.05E-03	2.53E-01	5.39E-02
Generating Station	Nearest Resident ^c 3.7mi NW		Nearest Resident + Garden ^d 4.4mi WSW	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	1.34E-03	2.51E-04	8.08E-02	1.62E-02
Salem Unit 2	1.52E-03	2.86E-04	9.18E-02	1.84E-02
Hope Creek	2.02E-03	3.80E-04	1.22E-01	2.45E-02
Site Total	4.88E-03	9.16E-04	2.95E-01	5.91E-02
Generating Station	Meat Animal ^e 4.2mi NNE		Meat Animal + Garden ^f 4.6mi SW	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	1.34E-02	2.68E-03	9.97E-02	1.99E-02
Salem Unit 2	1.52E-02	3.05E-03	1.13E-01	2.27E-02
Hope Creek	2.03E-02	4.06E-03	1.51E-01	3.02E-02
Site Total	4.89E-02	9.79E-03	3.64E-01	7.28E-02

^a Receptor = child; active pathways: inhalation

^b Receptor = infant; active pathways (based on 2013 Land Use Census): plume, ground, milk ingestion, and inhalation

^c Receptor = child; active pathways (based on 2013 Land Use Census): plume, ground, and inhalation; the C-14 dose via these exposure pathways is negligible

^d Receptor = child; active pathways (based on 2013 Land Use Census): plume, ground, vegetable ingestion, and inhalation

^e Receptor = child; active pathways (based on 2013 Land Use Census): plume, ground, meat ingestion, and inhalation

^f Receptor = child; active pathways (based on 2013 Land Use Census): plume, ground, meat and vegetable ingestion, and inhalation

1.4 Effluent Assessment

Liquids:

Liquid effluents released from the Salem and Hope Creek Generating Stations resulted in doses to a hypothetical maximally exposed individual that were within all applicable regulatory limits (Salem Unit 1: 9.69E-04% of the Total Body Limit, Salem Unit 2: 5.21E-04% of the Total Body Limit, and Hope Creek: 7.98E-04% of the Total Body Limit).

When compared to releases in the previous reporting period, the fission & activation product activity in the liquid effluents decreased slightly for the Salem Unit 1, Salem Unit 2, and Hope Creek Generating Station. The estimated doses from liquid effluent also decreased from the previous reporting period. The liquid effluent releases from the Salem Units and the Hope Creek Generating Station continue to remain well within Federal limits.

Gaseous:

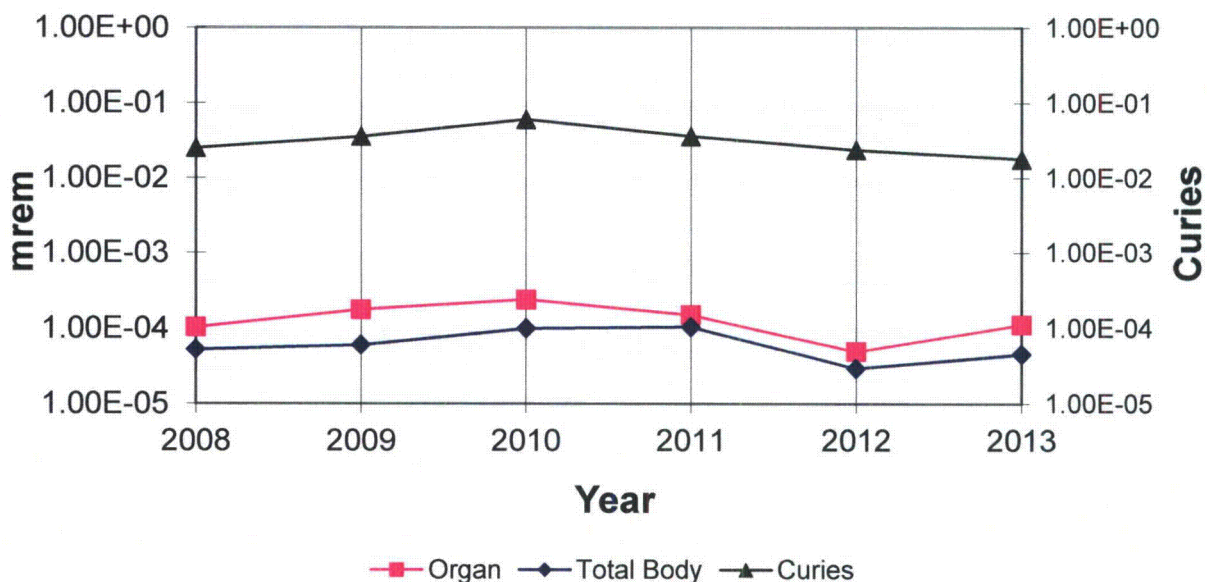
Gaseous effluents released from the Salem and Hope Creek Generating Stations resulted in doses to a maximally exposed individual that were within all applicable regulatory limits. The doses for the 12-month period from all radionuclides present in gaseous effluent, including C-14, were small fractions of all applicable limits (Salem Unit 1: 6.63E-01% of the annual organ (including total body) dose limit, Salem Unit 2: 7.53E-01% of the annual organ (including total body) dose limit, and Hope Creek: 1.09E+00% of the annual organ (including total body) dose limit).

When compared to releases in the previous reporting period, the Salem noble gas effluent activity and Hope Creek noble gas effluent activity increased. However, 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).

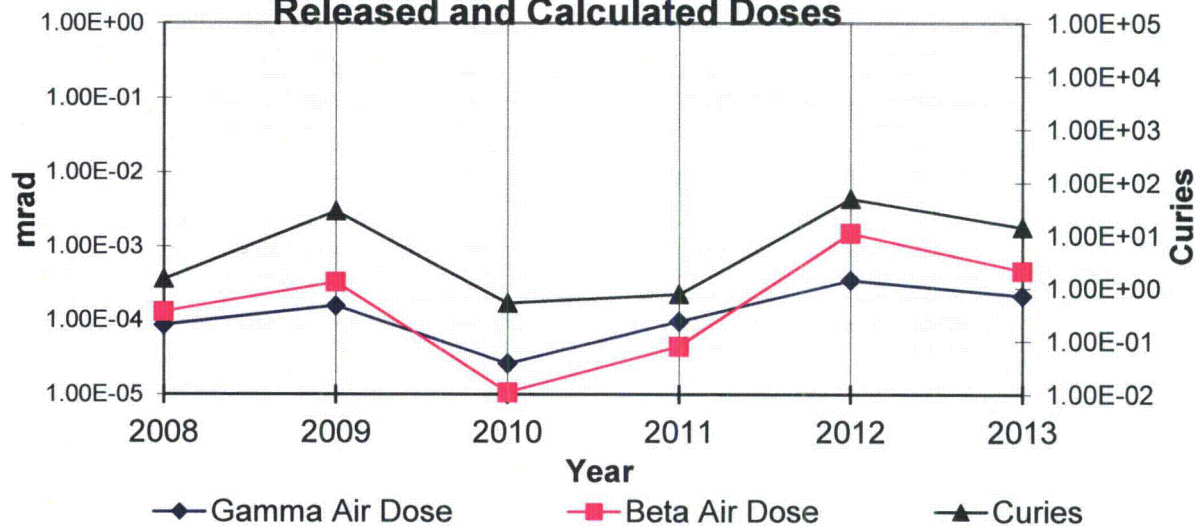
1.5 Effluent Trends

The following two trend graphs show the total curies of liquid and gaseous effluents released for Salem from 2008 through 2013. Calculated doses in the graphs are to the hypothetical maximum exposed individual.

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

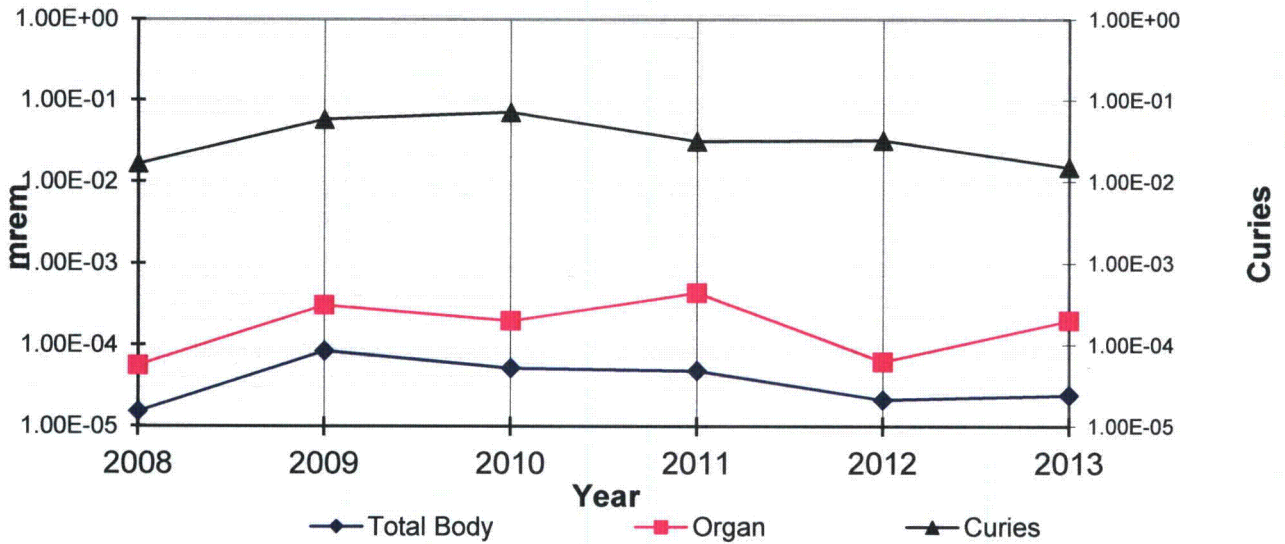


Gaseous Releases (SGS) Curies of Noble Gases Released and Calculated Doses

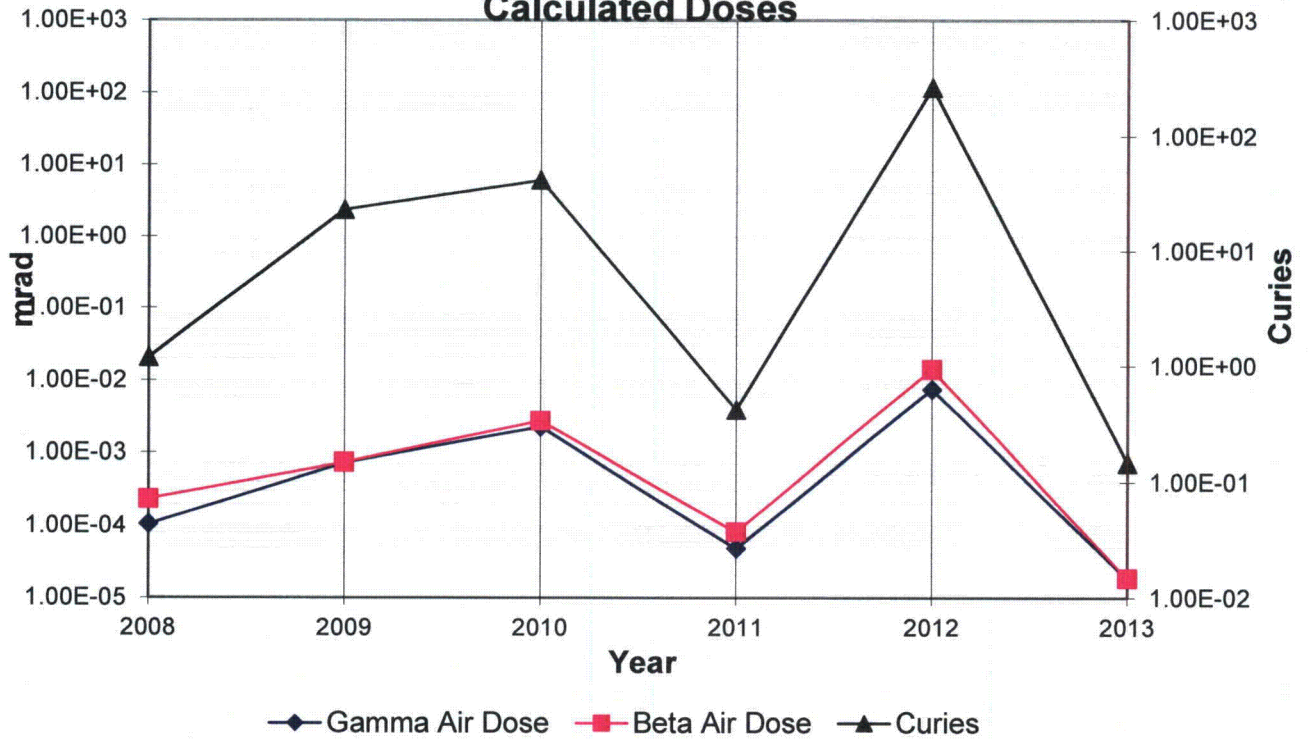


The following two trend graphs show the total curies of liquid and gaseous effluents released for Hope Creek from 2008 through 2013. Calculated doses in the graphs are to the hypothetical maximum exposed individual.

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



Gaseous Releases Curies of Noble Gases Released and Calculated Doses



PART F. METEOROLOGICAL DATA

Cumulative joint wind frequency distributions by atmospheric stability class for the reporting period are provided in Appendix A.

PART G. OFFSITE DOSE CALCULATION MANUAL CHANGES

During the reporting period, there was a revision to both the Salem and Hope Creek ODCMs.

ODCM Revision 27 Summary for Salem:

Page Number	Description of change
13	Reverted back to the Members of the Public definition. Justification: rationale for using both 10CFR20 and 40CFR190 not adequate.
19	Modified 4.0.1 to reflect current Technical Specifications Justification: Follows approved Technical Specifications
19	Modified 4.0.2 to reflect current Technical Specifications Justification: Follows approved Technical Specifications
19	Modified 4.0.4 to reflect current Technical Specifications Justification: Follows approved Technical Specifications
20	3.3.3.8.d Added "Report all deviations in the Radioactive Effluent Release Report" Justification: no reportability requirements for 3.3.3.8.a
23	Action 31 Added "grab" in front of sampling. Justification: Matches other Action steps
26	3.3.3.9.c Added "Report all deviations in the Radioactive Effluent Release Report" Justification: no reportability requirements for 3.3.3.9.a
33	Table 4.11-1 a. Added units (sec) to λ and Δt and changed ξ to Y Justification: Editorial
36	3.11.1.3 Changed to "exceed 0.06 mrem to the whole body or 0.2 mrem to any organ in a 31-day period," and editorial revision to the paragraph. Justification: need appropriate 31 day limit, aligns with NUREG 1301.
37	3.11.2.b and 4.11.2 .1.2 Added I-133

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Page Number	Description of change
	Justification: original TS used "radioiodines" later revision changed to I-131 but omitted 1-133 as required by TS 6.8.4.g (9)
41	3.11.2.3.a and 4.11.2.3 Added I-133 Justification: original TS used "radioiodines" later revision changed to I-131 but omitted 1-133 133 as required by TS 6.8.4.g (9)
42	3.11.2.4 changed limits to "0.2 mrad in air from gamma radiation, or 0.4 mrad in air from beta radiation or, 0.3 mrad to any organ to a MEMBER OF THE PUBLIC" Justification: need appropriate 31 day limit, aligns with NUREG 1301
43	3.11.4.a changed to 10 CFR Part 20.2203 (iv) from 10 CFR Part 20.405c Justification: regulatory reference changed
43	4.11.4.1 changed to the CONTROLS reference rather than the surveillance section Justification: Typos
46-52	Renamed Table 3.12.1-1 to Table 3.12-1 Justification: Agreement with text references
46	Table 3.12-1 changed number of direct reading dosimeters to 58 from 49. Changed distances of the outer ring to match NUREG 1301. Removed not bounded by water Justification: Reflects current number of locations.
47	Changed and added number of air sample locations and changed "high" to the NUREG specified "highest" Justification: Reflects current number of locations and aligns with the NUREG
48	Removed sampling of the Cooling Tower Blowdown sediment Justification: Inadvertently copied when revising Salem/Hope Creek revision 16
50	Aligned requirements for Food products from 3/4 12.2 Justification: Alignment with the NUREG
51	Table 3.12-1 Note (2). Added clarification of PD, "a device meeting the criteria of ANSI N545", and all sectors now have a passive dosimeter. Justification: Clarification allows any type of dosimeter: all sectors have a dosimeter.
51	Table 3.12-1 Note (3) Added explanatory note for additional air sampler locations. Justification; Added new air samplers from above
52	Table 3.12-1 Note (9). Changed to read "The dose shall be calculated for the maximum organ and age group using the methodology and parameters in the ODCM. There are no farms that meet the 5 km requirement and it is unlikely that any releases from the site will approach the 1 mrem criteria at 5 to 8 km. Milk samples will be taken (owner obliging) within 8 km and other management

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Page Number	Description of change
	audit samples within 16 km. Broad leaf vegetation (within 8 km) shall be sampled using the site gardens to demonstrate compliance with this pathway. Justification: Clarification of pathway
55	Table 4.12-1 (2) deleted "thermoluminescent" Justification: Allows for technical substitution of qualified dosimeters
55	Corrected calculation for the picocurie LLD Justification: 2.22 E6 is the dpm to microcurie conversion factor
55	Added value for very low count rate samples Justification: Added from NUREG 4007
57	Added text for elevated releases Justification: Alignment with the NUREG
59	3.12.3 Added "that has been approved by the Commission, that correspond to samples required by Table 3.12-1." to the end of the paragraph. Justification: Editorial enhancement.
66	BASES 3/4.11.2.3 Added I-133 Justification: original TS used "radioiodines" later revision changed to I-131 but omitted 1-133 133 as required by TS 6.8.4.g (9)
68	BASES 3/4.12.1 Added text from the NUREG that had been omitted. Justification: Editorial enhancement.
82	Updated section 1.6 to reflect changes to control 3.11.1.3 Justification: Aligns with the 31 day limits in NUREG 1301
109	Added new location to controlling pathways. Justification: Carbon 14 dose calculations added a new pathway
138	Appendix D Corrected Table reference to Table 2-3 from Table 3.2-4 in W variable description . Justification: Table 3.2-4 doesn't exist. Table 2-3 describes the required values.
143	Added PD locations to Table E-1 Justification: Aligns with new dosimeter locations
144	Added Air Sample locations to Table E-1 Justification: Aligns with new dosimeter locations
146	Added Broadleaf Sampling locations Justification: Have been part of the program, but not noted.
149	Updated map to reflect new locations
150	Updated map to reflect new locations

ODCM Revision 27 Summary for Hope Creek

Page Number	Description of change
14	Reverted back to the Members of the Public definition. Justification: rationale for using both 10CFR20 and 40CFR190 not adequate.
15	Incorporates outstanding change from DCP 80048085, AD P404 into HC ODCM, changing the definition of the RATED THERMAL POWER section 1.35 to 3840 from 3339.
21	3.3.7.10 Added "control 3.0.4" and "Report all deviations in the Radioactive Effluent Release Report" Justification: no reportability requirements for 3.3.7.10.a
26	3.3.7.11 Added "control 3.0.4" and "Report all deviations in the Radioactive Effluent Release Report" Justification: no reportability requirements for 3.3.7.11.a
40	Table 4.11.2.1.2-1 Added Offgas Treatment System Sampling requirements Justification: Reflects current sampling and aligns with the NUREG
40	Table 4.11.2.1.2-1 Changed sampling frequency for gross alpha to M from Q. Justification: Appears to be a typo in rev 0 of Tech Specs.
47	3.11.4.a changed to 10 CFR Part 20.2203 (iv) from 10 CFR Part 20.405c Justification: regulatory reference changed
50	Table 3.12.1-1 changed number of direct reading dosimeters to 58 from 49. Changed distances of the outer ring to match NUREG 1302. Removed not bounded by water Justification: Reflects current number of locations.
51	Changed number of air sample locations and changed "high" to the NUREG specified "highest" Justification: Reflects current number of locations and aligns with the NUREG
52	Removed sediment sample from the Cooling Tower Blowdown Justification: Samples taken in outfall area.
54	Added requirements for Food products Justification: Alignment with the NUREG

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Page Number	Description of change
55	Table 3.12.1-1 Note (2). Added clarification of PD, "a device meeting the criteria of ANSI N545". Justification: Clarification allows any type of dosimeter:
56	Table 3.12.1-1 Note (3) Added explanatory note for additional air sampler locations. Justification; Added new air samplers from above
57	Table 3.12.1-1 Note (9). Changed to read "The dose shall be calculated for the maximum organ and age group using the methodology and parameters in the ODCM. There are no farms that meet the 5 km requirement and it is unlikely that any releases from the site will approach the 1 mrem criteria at 5 to 8 km. Milk samples will be taken (owner obliging) within 8 km and other management audit samples within 16 km. Broad leaf vegetation (within 8 km) shall be taken to meet this pathway. Justification: Clarification of pathway
60	Table 4.12.1-1 (2) Removed "thermoluminescent" Justification: Allows for any type of dosimeter
60	Corrected formula and definition for picocuries Justification: Rev 26 had both picocuries and microcuries: environmental analysis are performed in picocuries.
61	Added value for very low count rate samples Justification: Added from NUREG 4007
62	Added text for elevated releases Justification: Alignment with the NUREG
64	3.12.3 Added "that has been approved by the Commission, that correspond to samples required by Table 3.12.1-1." to the end of the paragraph. Justification: Editorial enhancement.
111	Added new location to controlling pathways. Justification: Carbon 14 dose calculations added a new pathway
147/148	Added PD locations to Table E-1 Justification: Aligns with new dosimeter locations
148	Added Air Sample locations to Table E-1 Justification: Aligns with new dosimeter locations
150	Added Broadleaf Sampling locations Justification: Have been part of the program, but not noted.
153	Updated Map with locations
154	Updated Map with locations

PART H. INOPERABLE MONITORS

The PSEG corrective action program identifier is in parenthesis

CWDS Composite Sample Missing (70150817)

When attempting to composite the Hope Creek February 2013 Circulating Water Dewatering Sump monthly composite sample on 2/19/13, the February composite of the weekly samples was missing from the cabinet. The sampling procedure was modified to use the quarterly composite to substitute for the missing sample.

Unit 2 Emergency Sump Release to LVOW (70161492)

A review of chemistry Tritium Sample Analysis Log (HC.CH-RC.ZZ-00002) identified Unit 2 Emergency Sump tritium levels 1.156×10^{-5} uCi/ml (MDA was 2.373×10^{-6} uCi/ml) on November 4th 2013. The sump was discharged to Low Volume Oily Waste from 08:25 to 09:21 after analysis results were reported "clean/no activity". Liquid Effluent Permit 202691.007.008.L was generated on 11/22/13 to capture the above liquid release of the U2 Emergency Sump to the Low Volume Oily Waste discharge system. The 4th quarter data includes the data from this release.

LRW RAD MONITOR INOP >30 DAYS FOR DCP (70162505)

DCP 80107149 was implemented to upgrade the Hope Creek Liquid Radioactive Waste rad monitor 481661 and the duration of the repairs and return to service exceeded the 30 day requirement of ODCM 3.3.7.10 per LCO 13-320. Compensatory samples were taken during the 35 day period when the monitors were declared inoperable.

Weekly CWDS sample missed (70159324)

The weekly Circulating Water Dewatering Sump permit could not be opened because the sample collection inside the compositor was empty. After troubleshooting, the tubing from the sump to the compositor was found disconnected. The tubing is not easily visible as it is under a protective tarp, and could have become disconnected after the previous week's sample was collected. The tubing was re-attached and proper collection of the sample was verified. The concentration used for the missed sample was calculated as the average of the previous and following weeks' sample results.

PART I. PROCESS CONTROL PROGRAM (PCP) CHANGES

During the reporting period, there were no technical or programmatic changes to either the Salem or Hope Creek PCPs.

PART J. ENVIRONMENTAL MONITORING LOCATION CHANGES

In January 2013, 2 new air samplers were installed, one in the NNW sector 16S1 and one in the SSE sector, 6S1, along with passive dosimeters (currently TLDs) around the site in sectors 8, 9, 10, 12, 13, 14 to complete the inner ring, one at 16S3 to better model the site boundary in the northern sector, and another in sector 8, 8F1 to complete the outer ring.

PART K. GROUNDWATER SAMPLING DATA

Groundwater sampling data collected during the implementation of the Radiological Groundwater Protection Program (RGPP) during the reporting period are presented in Appendix C.

PART J. ENVIRONMENTAL MONITORING LOCATION CHANGES

Two new air sampling locations were added to sectors 16 and 6 on the site boundary along with passive dosimeters (currently TLDs) in sectors 8, 9, 10, 12, 13, and 14 near the site boundary and another passive dosimeter in sector 8

SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
Total Release	Ci	8.74E-02	1.39E+01	3.33E-02	1.57E-02	1.40E+01	3.400E+01
Average release rate for the period	μCi/sec	1.12E-02	1.77E+00	4.19E-03	1.98E-03	4.45E-01	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	1.13E-04	2.98E-03	1.48E-04	7.18E-05	1.66E-03	
	Beta Air %	2.13E-05	4.36E-03	2.87E-05	1.27E-05	2.21E-03	

B. Iodine ^a							
Total Iodine – 131.	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+01
Average release rate for the period	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	2.06E-01	2.56E-01	3.71E-01	4.93E-01	6.63E-01	

C. Particulates ^a							
Particulates with half-lives > 8 days	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+01
Average release rate for the period	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Percent of limit (ODCM 3.11.2.3(a))		2.06E-01	2.56E-01	3.71E-01	4.93E-01	6.63E-01	
Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

D. Tritium ^a							
Total Release	Ci	6.06E+00	6.18E-01	3.43E+00	9.96E+00	2.01E+01	3.10E+01
Average release rate for the period	μCi/sec	7.79E-01	7.86E-02	4.31E-01	1.25E+00	6.36E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	2.06E-01	2.56E-01	3.71E-01	4.93E-01	6.63E-01	

E. Carbon-14 ^a							
Total Release	Ci	2.54E+00	2.57E+00	2.60E+00	2.60E+00	1.03E+01	N/A ^b
Percent of limit (ODCM 3.11.2.3(a))	%	2.06E-01	2.56E-01	3.71E-01	4.93E-01	6.63E-01	

^a Iodine, Tritium, Carbon-14, and Particulates are treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on the most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluent).

^b It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
Total Release	Ci	2.78E-02	3.73E-02	7.45E-02	1.05E-01	2.45E-01	3.40E+01
Average release rate for the period	μCi/sec	3.58E-03	4.75E-03	9.37E-03	1.33E-02	7.75E-03	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	4.96E-05	1.68E-04	2.80E-04	3.92E-04	4.45E-04	
	Beta Air %	9.40E-06	3.16E-05	5.70E-05	1.03E-04	1.01E-04	

B. Iodine ^a							
Total Iodine – 131.	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+01
Average release rate for the period	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	2.33E-01	2.92E-01	4.22E-01	5.59E-01	7.53E-01	

C. Particulates ^a							
Particulates with half-lives > 8 days	Ci	0.00E+00	3.20E-06	0.00E+00	0.00E+00	3.20E-06	3.00E+01
Average release rate for the period	μCi/sec	0.00E+00	4.07E-07	0.00E+00	0.00E+00	1.01E-07	
Percent of limit (ODCM 3.11.2.3(a))	□	2.33E-01	2.92E-01	4.22E-01	5.59E-01	7.53E-01	
Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

D. Tritium ^a							
Total Release	Ci	7.11E+00	4.20E+00	4.79E+00	1.42E+01	3.03E+01	3.10E+01
Average release rate for the period	μCi/sec	9.14E-01	5.35E-01	6.02E-01	1.79E+00	9.61E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	2.33E-01	2.92E-01	4.22E-01	5.59E-01	7.53E-01	

E. Carbon-14 ^a							
Total Release	Ci	2.92E+00	2.92E+00	2.93E+00	2.93E+00	1.17E+01	N/A ^b
Percent of limit (ODCM 3.11.2.3(a))	%	2.33E-01	2.92E-01	4.22E-01	5.59E-01	7.53E-01	

^a Iodine, Tritium, Carbon-14, and Particulates are treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on the most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluent).

^b It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
Total Release	Ci	0.00E+00	3.32E-02	1.02E-01	9.54E-03	1.45E-01	3.400E+01
Average release rate for the period	μCi/sec	0.00E+00	4.22E-03	1.28E-02	1.20E-03	4.59E-03	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	0.00E+00	1.98E-04	1.59E-04	1.22E-05	1.85E-04	
	Beta Air %	0.00E+00	5.00E-05	1.27E-04	9.90E-06	9.35E-05	

B. Iodine ^a							
Total Iodine – 131.	Ci	3.32E-04	4.46E-04	4.48E-04	1.10E-03	2.33E-03	3.00E+01
Average release rate for the period	μCi/sec	4.27E-05	5.67E-05	5.64E-05	1.38E-04	7.38E-05	
Percent of limit (ODCM 3.11.2.3(a))	%	3.12E-01	3.89E-01	5.62E-01	9.12E-01	1.09E+00	

C. Particulates ^a							
Particulates with half-lives > 8 days	Ci	1.97E-04	2.30E-04	1.51E-04	6.93E-05	6.47E-04	3.00E+01
Average release rate for the period	μCi/sec	2.54E-05	2.92E-05	1.89E-05	8.71E-06	2.05E-05	
Percent of limit (ODCM 3.11.2.3(a))	□	3.12E-01	3.89E-01	5.62E-01	9.12E-01	1.09E+00	
Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

D. Tritium ^a							
Total Release	Ci	2.29E+01	3.89E+01	9.78E+01	2.13E+01	1.81E+02	3.10E+01
Average release rate for the period	μCi/sec	2.95E+00	4.95E+00	1.23E+01	2.69E+00	5.74E-06	
Percent of limit (ODCM 3.11.2.3(a))	%	3.12E-01	3.89E-01	5.62E-01	9.12E-01	1.09E+00	

E. Carbon-14 ^a							
Total Release	Ci	3.85E+00	3.89E+00	3.93E+00	3.93E+00	1.56E+01	N/A ^b
Percent of limit (ODCM 3.11.2.3(a))	%	3.12E-01	3.89E-01	5.62E-01	9.12E-01	1.09E+00	

^b Iodine, Tritium, Carbon-14, and Particulates are treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluent).

^c It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

SALEM AND HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – ELEVATED RELEASES

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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – DECEMBER 2013
 GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
1. Fission gases											
Ar-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.91E-02	7.01E-03	2.54E-02	1.54E-02	9.69E-02
Kr-85m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-05	7.50E-04	0.00E+00	0.00E+00
Kr-87	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-133	Ci	0.00E+00	1.38E+01	0.00E+00	0.00E+00	1.38E+01	3.83E-02	8.09E-02	6.46E-03	3.06E-04	1.26E-01
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-03	0.00E+00	0.00E+00	1.14E-03
Xe-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-05	6.29E-03	7.54E-04	0.00E+00	7.06E-03
Xe-135m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	1.38E+01	0.00E+00	0.00E+00	1.38E+01	8.74E-02	9.54E-02	3.33E-02	1.57E-02	2.32E-01
2. Iodines											
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Particulates											
Mn-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zn-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Tritium	Ci	5.87E+00	3.13E-01	2.82E+00	9.69E+00	1.87E+01	1.86E-01	3.05E-01	6.04E-01	2.75E-01	1.37E+00
5. Carbon-14	Ci	2.54E+00	2.57E+00	2.60E+00	2.60E+00	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
1. Fission gases											
Ar-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-02	3.00E-02	4.81E-02	7.08E-02	1.71E-01
Kr-85m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-87	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.89E-03	7.32E-03	2.64E-02	3.37E-02	7.33E-02
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.46E-04	3.46E-04
Xe-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.78E-04	5.78E-04
Xe-135m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E-02	3.73E-02	7.45E-02	1.05E-01	2.45E-01
2. Iodines											
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.											
Mn-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zr-95	Ci	0.00E+00	1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb-95	Ci	0.00E+00	1.91E-06	0.00E+00	0.00E+00	1.91E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	3.20E-06	0.00E+00	0.00E+00	3.20E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Tritium	Ci	7.05E+00	4.05E+00	4.09E+00	1.37E+01	2.89E+01	5.87E-02	1.58E-01	6.98E-01	4.98E-01	1.41E+00
5. Carbon-14	Ci	2.88E+00	2.92E+00	2.95E+00	2.95E+00	1.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
1. Fission gases											
Ar-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-02	0.00E+00	0.00E+00	1.16E-02
Kr-85m	Ci	0.00E+00	0.00E+00	1.02E-01	8.93E-03	1.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-133	Ci	0.00E+00	0.00E+00	0.00E+00	2.24E-05	2.24E-05	0.00E+00	1.26E-03	0.00E+00	1.79E-04	1.44E-03
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	1.65E-04	1.65E-04	0.00E+00	0.00E+00	0.00E+00	1.96E-04	1.96E-04
Xe-135	Ci	0.00E+00	0.00E+00	9.09E-09	0.00E+00	9.09E-09	0.00E+00	1.42E-02	0.00E+00	4.86E-05	1.42E-02
Xe-135m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.15E-03	0.00E+00	0.00E+00	6.15E-03
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	0.00E+00	0.00E+00	1.02E-01	9.11E-03	1.11E-01	0.00E+00	3.32E-02	0.00E+00	4.23E-04	3.36E-02
2. Iodines											
I-131	Ci	3.32E-04	4.46E-04	4.48E-04	1.10E-03	2.33E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	7.98E-03	9.91E-03	1.25E-02	4.75E-03	3.51E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	8.31E-03	1.04E-02	1.29E-02	5.85E-03	3.75E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3. Particulates											
Na-24	Ci	0.00E+00	9.28E-03	0.00E+00	7.01E-03	1.63E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cr-51	Ci	0.00E+00	5.21E-05	0.00E+00	0.00E+00	5.21E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mn-54	Ci	1.01E-05	2.36E-05	0.00E+00	0.00E+00	3.37E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-57	Ci	0.00E+00	0.00E+00	0.00E+00	1.52E-07	1.52E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60	Ci	1.87E-04	1.54E-04	1.50E-04	4.84E-05	5.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mo-99	Ci	1.01E-05	0.00E+00	0.00E+00	0.00E+00	1.01E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tc-99m	Ci	1.03E-05	0.00E+00	0.00E+00	0.00E+00	1.03E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ce-143	Ci	0.00E+00	0.00E+00	0.00E+00	1.49E-05	1.49E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nd-147	Ci	0.00E+00	0.00E+00	1.01E-06	0.00E+00	1.01E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Au-199	Ci	1.65E-09	0.00E+00	0.00E+00	2.07E-05	2.07E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	Ci	2.18E-04	9.51E-03	1.51E-04	7.09E-03	1.70E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Tritium	Ci	2.29E+01	3.89E+01	9.78E+01	2.13E+01	1.81E+02	0.00E+00	2.69E-03	0.00E+00	2.88E-03	5.57E-03
5. Carbon-14	Ci	3.85E+00	3.89E+00	3.93E+00	3.93E+00	1.56E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SALEM GENERATING STATION –UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	7.73E-04	8.14E-03	1.58E-03	7.99E-04	1.13E-02	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.82E-12	2.81E-11	3.39E-12	1.67E-12	9.56E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	2.16E-04	1.27E-03	4.89E-05	9.59E-05	8.15E-04	
		5.12E-04	1.19E-03	1.03E-04	1.36E-04	9.69E-04	

B. Tritium							
1. Total Release	Ci	1.59E+02	1.32E+02	4.94E+01	2.45E+01	3.65E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.74E-07	4.55E-07	1.06E-07	5.18E-08	3.09E-09	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	2.16E-04	1.27E-03	4.89E-05	9.59E-05	8.15E-04	
		5.12E-04	1.19E-03	1.03E-04	1.36E-04	9.69E-04	

C. Dissolved & Entrained Gases							
1. Total Release	Ci	0.00E+00	1.05E-04	0.00E+00	0.00E+00	1.05E-04	2.70E+01
2. Average diluted concentration during period	µCi/ml	0.00E+00	3.61E-13	0.00E+00	0.00E+00	8.89E-14	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	0.00E+00	1.81E-07	0.00E+00	0.00E+00	2.67E-13	

D. Gross Alpha Activity							
Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E+01

E. Volume Of Waste Released (prior to dilution)	Liters	5.21E+07	4.22E+07	5.21E+07	5.18E+07	1.98E+08

F. Volume Of Dilution Water Used During Period	Liters	4.25E+11	2.90E+11	4.66E+11	4.732E+11	1.18E+12

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM GENERATING STATION –UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	1.26E-03	3.70E-03	1.21E-03	2.42E-04	6.41E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.07E-12	8.72E-12	2.58E-12	5.81E-13	3.73E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	2.16E-04	1.27E-03	4.89E-05	9.59E-05	8.15E-04	
		5.12E-04	1.19E-03	1.03E-04	1.36E-04	9.69E-04	

B. Tritium							
1. Total Release	Ci	1.20E+02	6.90E+01	7.93E+01	8.38E+00	2.77E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	2.93E-07	1.63E-07	1.69E-07	2.01E-08	1.61E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	2.16E-04	1.27E-03	4.89E-05	9.59E-05	8.15E-04	
		5.12E-04	1.19E-03	1.03E-04	1.36E-04	9.69E-04	

C. Dissolved & Entrained Gases							
1. Total Release	Ci	1.45E-05	1.10E-05	0.00E+00	0.00E+00	2.55E-05	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.54E-14	2.60E-14	0.00E+00	0.00E+00	1.48E-14	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	1.77E-08	1.30E-8	0.00E+00	0.00E+00	7.42E-09	

D. Gross Alpha Activity							
Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E+01

E. Volume Of Waste Released (prior to dilution)	Liters	5.00E+07	5.04E+07	5.07E+07	5.02E+07	2.01E+08

F. Volume Of Dilution Water Used During Period	Liters	4.10E+11	4.24E+11	4.69E+11	4.16E+11	1.72E+12

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	8.20E-04	5.90E-03	2.86E-03	5.38E-03	1.50E-02	2.70E+01
2. Average diluted concentration during period	µCi/ml	6.85E-11	3.91E-10	1.40E-10	3.42E-10	2.36E-10	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	4.19E-05	2.17E-04	1.02E-05	1.28E-03	8.71E-04	
		1.04E-04	3.96E-04	3.82E-04	7.13E-04	7.98E-04	
B. Tritium							
1. Total Release	Ci	3.94E+00	1.10E+01	1.73E+01	3.07E+01	6.29E+01	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.30E-07	7.26E-07	8.43E-07	1.95E-06	9.91E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Organ %	4.19E-05	2.17E-04	1.02E-05	1.28E-03	8.71E-04	
		1.04E-04	3.96E-04	3.82E-04	7.13E-04	7.98E-04	
C. Dissolved & Entrained Gases							
1. Total Release	Ci	3.64E-06	4.12E-05	2.63E-05	1.88E-04	2.59E-04	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.04E-13	2.73E-12	1.28E-12	1.20E-11	4.08E-12	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	1.52E-07	1.37E-06	6.40E-07	6.00E-06	2.04E-06	
D. Gross Alpha Activity							
Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E+01
E. Volume Of Waste Released (prior to dilution)							
	Liters	4.96E+07	5.09E+07	5.14E+07	4.21E+07	1.94E+08	
F. Volume Of Dilution Water Used During Period							
	Liters	1.20E+10	1.51E+10	2.05E+10	1.57E+10	6.33E+10	

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM GENERATING STATION – UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – DECEMBER 2013
 LIQUID EFFLUENTS

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
H-3	Ci	3.93E-02	1.52E-02	2.6E-01	5.78E-01	8.93E-01	1.59E+02	1.32E+02	4.91E+01	2.39E+01	3.64E+02
Total for Period	Ci	3.93E-02	1.52E-02	2.6E-01	5.78E-01	8.93E-01	1.59E+02	1.32E+02	4.91E+01	2.39E+01	3.64E+02
Fission and Activation Products											
Cr-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-05	0.00E+00	2.30E-05
Mn-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-05	0.00E+00	2.48E-05	4.58E-05
Co-57	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-05	0.00E+00	5.97E-06	2.00E-05
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.92E-04	6.90E-03	1.24E-03	2.31E-04	8.86E-03
Co-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-04	4.92E-04	8.70E-05	4.61E-04	1.17E-03
Zn-69m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.19E-06	0.00E+00	9.19E-06
Nb-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.85E-06	0.00E+00	0.00E+00	2.01E-06	1.19E-05
Nb-97	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.58E-06	0.00E+00	6.10E-06	1.27E-05
Tc-101	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.72E-05	0.00E+00	0.00E+00	0.00E+00	1.72E-05
Ru-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.63E-06	0.00E+00	0.00E+00	5.63E-06
Ag-110m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.75E-05	0.00E+00	0.00E+00	6.75E-05
Sb-124	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.53E-06	1.78E-05	0.00E+00	0.00E+00	2.23E-05
Sb-125	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-04	6.09E-04	5.10E-05	2.33E-05	7.99E-04
Cs-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-06	4.13E-06	1.65E-04	0.00E+00	1.73E-04
Cs-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-07	0.00E+00	9.80E-06	3.60E-05	4.59E-05
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.74E-04	8.12E-03	1.56E-03	7.65E-04	1.12E-02
Dissolved and Entrained Noble Gases											
Kr-85m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-06	3.49E-06
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.00E-05	0.00E+00	0.00E+00	9.00E-05
Xe-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-05	1.61E-05	5.18E-05	8.23E-05
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	1.76E-05
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-04	1.61E-05	7.29E-05	1.93E-04

SALEM GENERATING STATION – UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
LIQUID EFFLUENTS

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
H-3	Ci	6.18E-02	9.10E-02	1.09E-01	1.11E-01	3.73E-01	1.20E+02	6.89E+01	7.92E+01	8.27E+00	2.76E+02
Total for Period	Ci	6.18E-02	9.10E-02	1.09E-01	1.11E-01	3.73E-01	1.20E+02	6.89E+01	7.92E+01	8.27E+00	2.76E+02
Fission and Activation Products											
Cr-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.37E-05	0.00E+00	0.00E+00	0.00E+00	2.37E-05
Co-57	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.96E-06	0.00E+00	0.00E+00	0.00E+00	1.96E-06
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.47E-04	1.97E-03	1.05E-03	1.86E-04	3.65E-03
Co-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-04	2.02E-04	6.33E-05	2.63E-05	4.12E-04
Nb-97	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.46E-06	0.00E+00	0.00E+00	7.46E-06
Ru-105	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-05	2.06E-05	0.00E+00	0.00E+00	3.37E-05
Ag-110m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.27E-05	0.00E+00	0.00E+00	4.27E-05
Sb-124	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.91E-05	5.14E-05	0.00E+00	0.00E+00	1.21E-04
Sb-125	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.78E-04	1.40E-03	9.74E-05	2.96E-05	2.11E-03
Cs-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.21E-06	0.00E+00	0.00E+00	4.21E-06
Ce-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-06	0.00E+00	0.00E+00	0.00E+00	5.60E-06
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-03	3.70E-03	1.21E-03	2.42E-04	6.41E-03
Dissolved and Entrained Noble Gases											
Xe-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-05	1.10E-05	0.00E+00	0.00E+00	2.55E-05
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-05	1.10E-05	0.00E+00	0.00E+00	2.55E-05

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

**HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
LIQUID EFFLUENTS**

Nuclides Released	Unit	Continuous Mode				Batch Mode					
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
H-3	Ci	4.81E-01	1.61E+00	1.77E+00	1.79E+00	5.65E+00	3.46E+00	9.35E+00	1.55E+01	2.89E+01	5.72E+01
Total for Period	Ci	4.81E-01	1.61E+00	1.77E+00	1.79E+00	5.65E+00	3.46E+00	9.35E+00	1.55E+01	2.89E+01	5.72E+01
Fission and Activation Products											
Cr-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.62E-05	3.62E-05
Mn-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.21E-05	6.09E-04	3.92E-04	4.90E-04	1.58E-03
Fe-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-03	0.00E+00	0.00E+00	2.45E-03
Co-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-06	5.48E-06	1.84E-05	1.77E-05	4.49E-05
Co-60	Ci	0.00E+00	0.00E+00	0.00E+00	2.36E-04	2.36E-04	6.61E-04	2.72E-03	2.24E-03	4.32E-03	9.94E-03
Zn-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.30E-05	1.10E-04	2.10E-04	2.00E-04	5.63E-04
Sr-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb-97	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-06	0.00E+00	0.00E+00	0.00E+00	5.26E-06
Mo-99	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-06	1.10E-06
Tc-99m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-06	1.12E-06
Tc-101	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.42E-05	2.42E-05
Sb-124	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-05	1.71E-05
Sb-125	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.81E-06	7.81E-06
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.14E-07	0.00E+00	0.00E+00	0.00E+00	9.14E-07
Cs-137	Ci	0.00E+00	0.00E+00	0.00E+00	7.13E-07	7.13E-07	8.43E-07	7.89E-07	4.04E-07	6.60E-07	2.70E-06
Ba-139	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+01	2.22E-06	2.22E-06
Ba-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ce-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-06	0.00E+00	2.22E-06
Ce-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-06	0.00E+00	0.00E+00	1.52E-06
Ce-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.92E-06	5.92E-06
Other ^a	Ci	0.00E+00	0.00E+00	0.00E+00	1.43E-05	1.43E-05	1.35E-05	0.00E+00	0.00E+00	7.70E-07	1.43E-05
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	2.51E-04	2.51E-04	8.20E-04	5.89E-03	2.86E-03	5.13E-03	5.26E-06
Dissolved and Entrained Noble Gases											
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-06	0.00E+00	0.00E+00	2.07E-06
XE-131m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E-05	0.00E+00	2.35E-05	6.19E-05
Xe-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.57E-06	0.00E+00	1.59E-05	1.35E-04	1.52E-04
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-05	1.14E-05
Xe-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-06	7.23E-07	1.04E-05	1.88E-05	2.16E-05
Total for Period		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.64E-06	4.12E-05	2.63E-05	1.88E-04	2.59E-04

^a "Other" was assigned to an unconfirmed peak appearing in the gamma analysis of several first and fourth quarter effluent samples. Doses associated with the activity were assessed using the most conservative dose conversion factors listed in the ODCM.

SALEM GENERATING STATION – UNITS 1 AND 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (Not Irradiated Fuel)

a. Waste Stream; Resins, Filters, and Evaporator Bottoms
U/1 CVCS Bead Resin Dewatered Charcoal, Liquid Waste Processing
Resin

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	5.27E+02	1.49E+01	1.94E+01	+/-25%
B	3.00E+02	8.50E+00	2.15E+02	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	8.27E+02	2.34E+01	2.35E+02	+/-25%

Major Nuclides for Above Table:

Resins, Filters and Evaporator Bottoms		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	2.57%	4.99E-01
Fe-55	28.61%	5.54E+00
Co-58	8.07%	1.56E+00
Co-60	4.91%	9.52E-01
Ni-63	52.30%	1.01E+01
Sb-125	2.12%	4.11E-01

Resins, Filters and Evaporator Bottoms		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
Fe-55	6.88%	1.48E+01
Co-60	18.73%	4.03E+01
Ni-63	61.14%	1.32E+02
Cs-137	9.68%	2.08E+01

Resins, Filters and Evaporator Bottoms		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Fe-55	8.68%	2.04E+01
Co-60	17.59%	4.13E+01
Ni-63	60.41%	1.42E+02
Cs-137	8.91%	2.09E+01

**b. Waste Stream; Dry Active Waste
Seavan DAW**

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.70E+04	4.81E+02	4.57E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.26E+04	6.40E+02	1.84E+00	+/-25%

Major Nuclides for Above Table:

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	3.96%	1.81E-01
Fe-55	32.36%	1.48E+00
Co-58	5.31%	2.43E-01
Co-60	8.39%	3.84E-01
Ni-63	39.65%	1.81E+00
Cs-137	8.64%	3.95E-01

Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	3.96%	1.81E-01
Fe-55	32.36%	1.48E+00
Co-58	5.31%	2.43E-01
Co-60	8.39%	3.84E-01
Ni-63	39.65%	1.81E+00
Cs-137	8.64%	3.95E-01

c. Waste Stream; Irradiated Components

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Major Nuclides for Above Table: None

d. Waste Stream; Other Waste

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Major Nuclides for Above Table: None

e. Waste Stream; Sum of All 4 Categories

U/1 CVCS Bead Resin Seavan DAW, Dewatered Charcoal/Liquid Waste Processing Resin

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.75E+04	4.96E+02	2.40E+01	+/-25%
B	3.00E+02	8.50E+00	2.15E+02	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.78E+04	5.05E+02	2.39E+02	+/-25%

Major Nuclides for Above Table:

Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	2.84%	6.80E-01
Fe-55	29.32%	7.03E+00
Co-58	7.54%	1.81E+00
Co-60	5.58%	1.34E+00
Ni-63	49.88%	1.20E+01
Sb-125	1.83%	4.39E-01
Cs-137	1.98%	4.73E-01

Sum of All 4 Categories		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
Fe-55	6.88%	1.48E+01
Co-60	18.73%	4.03E+01
Ni-63	61.14%	1.32E+02
Cs-137	9.68%	2.08E+01

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Sum of all 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Fe-55	9.13%	2.18E+01
Co-60	17.41%	4.17E+01
Ni-63	60.01%	1.44E+02
Cs-137	8.91%	2.13E+01

Number of Shipments	Mode Of Transportation	Destination
1	Hittman Transport Services, Inc.	Barnwell Disposal Facility, Barnwell, SC
6	Hittman Transport Services, Inc.	Barnwell Processing Facility, Barnwell, SC
7	R & R Trucking, Inc.	Studsvik Processing Facility, Memphis, TN

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – December 2013
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (Not Irradiated Fuel)

a. Waste Stream; Resins, Filters, and Evaporator Bottoms

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.12E+03	3.16E+01	8.21E+01	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.12E+03	3.16E+01	8.21E+01	+/-25%

Major Nuclides for Above Table:

Resins, Filters and Evaporator Bottoms		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Mn-54	3.48%	2.86E+00
Fe-55	76.22%	6.26E+01
Co-60	16.12%	1.32E+01
Ni-63	1.03%	8.45E-01
Zn-65	2.41%	1.98E+00

Resins, Filters and Evaporator Bottoms		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	3.48%	2.86E+00
Fe-55	76.22%	6.26E+01
Co-60	16.12%	1.32E+01
Ni-63	1.03%	8.45E-01
Zn-65	2.41%	1.98E+00

**b. Waste Stream; Dry Active Waste
Seavan DAW**

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	2.76E+04	7.82E+02	7.03E-01	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.76E+04	7.82E+02	7.03E-01	+/-25%

Major Nuclides for Above Table:

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Cr-51	4.85%	3.41E-02
Mn-54	8.32%	5.85E-02
Fe-55	28.38%	1.99E-01
Fe-59	0.93%	6.56E-03
Co-58	1.64%	1.15E-02
Co-60	53.29%	3.74E-01
Zn-65	1.87%	1.32E-02

Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Cr-51	4.85%	3.41E-02
Mn-54	8.32%	5.85E-02
Fe-55	28.38%	1.99E-01
Fe-59	0.93%	6.56E-03
Co-58	1.64%	1.15E-02
Co-60	53.29%	3.74E-01
Zn-65	1.87%	1.32E-02

c. Waste Stream; Irradiated Components

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Major Nuclides for Above Table: None

d. Waste Stream; Other Waste

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	8.00E+03	2.26E+02	9.39E-02	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	8.00E+03	2.26E+02	9.39E-02	+/-25%

Major Nuclides for Above Table:

Other Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	4.30%	4.04E-03
Mn-54	10.85%	1.02E-02
Fe-55	37.30%	3.50E-02
Co-60	40.11%	3.76E-02
Ni-63	1.20%	1.13E-03
Zn-65	2.74%	2.57E-03
Ba-140	2.14%	2.01E-03
Ce-141	0.90%	8.47E-04

Other Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	4.30%	4.04E-03
Mn-54	10.85%	1.02E-02
Fe-55	37.30%	3.50E-02
Co-60	40.11%	3.76E-02
Ni-63	1.20%	1.13E-03
Zn-65	2.74%	2.57E-03
Ba-140	2.14%	2.01E-03
Ce-141	0.90%	8.47E-04

e. Waste Stream; Sum of All 4 Categories

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	3.67E+04	1.04E+03	8.29E+01	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	3.67E+04	1.04E+03	8.29E+01	+/-25%

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Major Nuclides for Above Table:

Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Mn-54	3.53%	2.93E+00
Fe-55	75.77%	6.28E+01
Co-60	16.46%	1.36E+01
Ni-63	1.03%	8.49E-01
Zn-65	2.41%	1.99E+00

Sum of All 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	3.53%	2.93E+00
Fe-55	75.77%	6.28E+01
Co-60	16.46%	1.36E+01
Ni-63	1.03%	8.49E-01
Zn-65	2.41%	1.99E+00

Number of Shipments	Mode Of Transportation	Destination
3	Hittman Transport Services, Inc.	Barnwell Processing Facility, Barnwell, SC
2	Hittman Transport Services, Inc.	Energy Solutions, Kingston, TN
3	Landstar Systems	Studsvik Processing Facility, Memphis, TN
12	R & R Trucking, Inc.	Studsvik Processing Facility, Memphis, TN

SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

Type of Release:	Gaseous			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	144	95	198	105
Total time duration for all releases of type listed above: Minutes	1.20E+04	7.99E+03	1.33E+04	8.97E+03
Maximum duration for release of type listed above: Minutes.	1.50E+02	1.59E+02	2.40E+02	2.10E+02
Average duration for release of type listed above: Minutes.	8.31E+01	8.41E+01	6.70E+01	8.54E+02
Minimum duration for release of type listed above: Minutes.	4.50E+01	3.00E+00	3.00E+01	4.90E+01
Average stream flow (dilution flow) during period of release:	N/A	N/A	N/A	N/A

SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
JANUARY – DECEMBER 2013
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

Type of Release:	Gaseous			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	105	82	124	179
Total time duration for all releases of type listed above: Minutes.	8.00E+03	5.93E+03	8.58E+03	1.37E+04
Maximum duration for release of type listed above: Minutes.	1.68E+02	1.18E+02	2.40E+02	1.80E+02
Average duration for release of type listed above: Minutes.	7.62E+01	7.23E+01	6.90E+01	7.63E+01
Minimum duration for release of type listed above: Minutes.	1.30E+01	3.90E+01	3.30E+01	3.00E+01
Average stream flow (dilution flow) during period of release:	N/A	N/A	N/A	N/A

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – JUNE 2013
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

Type of Release:	Gaseous			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	0	1	0	5
Total time duration for all releases of type listed above: Minutes	0.00E+00	8.51E+03	0.00E+00	7.08E+03
Maximum duration for release of type listed above: Minutes.	0.00E+00	8.51E+03	0.00E+00	3.03E+03
Average duration for release of type listed above: Minutes.	0.00E+00	8.51E+03	0.00E+00	1.42E+03
Minimum duration for release of type listed above: Minutes.	0.00E+00	8.51E+03	0.00E+00	3.25E+02
Average stream flow (dilution flow) during period of release:	N/A	N/A	N/A	N/A

SALEM GENERATING STATION - UNIT 1
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY - JUNE 2013
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

Type of Release:	Liquid			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	30	47	10	18
Total time duration for all releases of type listed above: Minutes.	7.84E+03	2.34E+04	2.90E+03	4.00E+03
Maximum duration for release of type listed above: Minutes.	5.34E+02	1.39E+03	4.92E+02	4.02E+02
Average duration for release of type listed above: Minutes.	2.61E+02	4.98E+02	2.90E+02	2.22E+02
Minimum duration for release of type listed above: Minutes.	1.00E+00	1.00E+00	5.30E+01	5.80E-01
Average stream flow (dilution flow) during period of release: GPM	8.66E+05	5.85E+05	9.29E+05	9.44E+05

SALEM GENERATING STATION - UNIT 2
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – JUNE 2013
 SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
 IN A BATCH MODE

Type of Release:	Liquid			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	15	14	9	9
Total time duration for all releases of type listed above: Minutes.	5.60E+03	5.43E+03	3.49E+03	3.36E+03
Maximum duration for release of type listed above: Minutes.	6.82E+02	5.71E+02	5.44E+02	5.47E+02
Average duration for release of type listed above: Minutes.	3.74E+02	3.88E+02	3.88E+02	3.73E+02
Minimum duration for release of type listed above: Minutes.	1.98E+02	3.06E+02	2.97E+02	2.38E+02
Average stream flow (dilution flow) during period of release: GPM	8.36E+05	8.55E+05	9.35E+05	8.30E+05

HOPE CREEK GENERATING STATION
EFFLUENTS AND WASTE DISPOSAL ANNUAL REPORT
 JANUARY – JUNE 2013
 SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
 IN A BATCH MODE

Type of Release:	Liquid			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Quarter:	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of releases:	30	47	10	18
Total time duration for all releases of type listed above: Minutes.	7.84E+03	2.34E+04	2.90E+03	4.00E+03
Maximum duration for release of type listed above: Minutes.	5.34E+02	1.39E+03	4.92E+02	4.02E+02
Average duration for release of type listed above: Minutes.	2.61E+02	4.98E+02	2.90E+02	2.22E+02
Minimum duration for release of type listed above: Minutes.	1.00E+00	1.00E+00	5.30E+01	5.80E-01
Average stream flow (dilution flow) during period of release: GPM	2.46E+04	3.05E+04	4.10E+04	3.14E+04

APPENDIX A

METEOROLOGICAL
DATA

Salem/Hope Creek Meteorological Tower
Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class
33 Ft. Wind Level
300 – 33 Ft. Delta Temperature
January – March 2013

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	0	0	0	1	0	1
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	0	0	0	0	0	0	0	0	0
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	0	0	0	0	0
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	0	2	2	0	0	4
258.75 - 281.25	W	0	0	0	0	0	0	2	1	5	0	0	9
281.25 - 303.75	WNW	0	0	0	0	0	2	2	6	12	1	0	23
303.75 - 326.25	NW	0	0	0	0	0	0	1	2	16	5	0	24
326.25 - 348.75	NNW	0	0	0	0	0	0	5	4	5	1	2	17

Total 78

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.05
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.093	0.093	0.000	0.000	0.19
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.047	0.093	0.047	0.233	0.000	0.000	0.42
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.093	0.093	0.279	0.558	0.047	0.000	1.07
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.093	0.744	0.233	0.000	1.12
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.233	0.186	0.233	0.047	0.093	0.79

Total 3.63

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	0	0	0	1	2	0	0	3
11.25 - 33.75	NNE	0	0	0	0	0	1	1	0	1	0	0	3
33.75 - 56.25	NE	0	0	0	0	0	0	0	0	0	0	0	0
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	1	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	1	1	0	0	0	0	0	2
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	2	0	0	0	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	0	1	2	0	2	0	0	5
258.75 - 281.25	W	0	0	0	0	3	2	3	1	1	2	1	13
281.25 - 303.75	WNW	0	0	0	0	0	0	1	4	8	0	0	13
303.75 - 326.25	NW	0	0	0	0	1	3	6	9	11	5	0	35
326.25 - 348.75	NNW	0	0	0	0	0	1	4	6	9	4	0	24

Total 102

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.093	0.000	0.000	0.14
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.047	0.000	0.000	0.14
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.09
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.047	0.093	0.000	0.093	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.140	0.093	0.140	0.047	0.047	0.093	0.047	0.60
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.186	0.372	0.000	0.000	0.60
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.047	0.140	0.279	0.419	0.512	0.233	0.000	1.63
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.047	0.186	0.279	0.419	0.186	0.000	1.12

Total 4.74

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	0	2	1	5	3	1	0	12
11.25 - 33.75	NNE	0	0	0	0	0	0	0	1	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	2	0	0	0	0	0	0	2
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	2	2	1	0	0	0	0	5
101.25 - 123.75	ESE	0	0	0	0	1	0	0	1	0	0	0	2
123.75 - 146.25	SE	0	0	0	0	2	1	0	2	0	0	0	5
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	1	0	1	0	0	0	0	2
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	2	0	0	1	0	0	0	3
236.25 - 258.75	WSW	0	0	0	0	2	1	0	1	3	0	0	7
258.75 - 281.25	W	0	0	0	0	0	2	1	2	1	1	0	7
281.25 - 303.75	WNW	0	0	0	0	1	2	1	5	3	2	0	14
303.75 - 326.25	NW	0	0	0	0	4	5	9	7	8	5	0	38
326.25 - 348.75	NNW	0	0	0	0	2	2	5	9	4	5	0	27

Total 125

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.093	0.047	0.233	0.140	0.047	0.000	0.56
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.09
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.093	0.093	0.047	0.000	0.000	0.000	0.000	0.23
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047	0.000	0.000	0.000	0.09
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.093	0.047	0.000	0.093	0.000	0.000	0.000	0.23
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.047	0.000	0.047	0.000	0.000	0.000	0.000	0.09
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.047	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.093	0.047	0.000	0.047	0.140	0.000	0.000	0.33
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.093	0.047	0.093	0.047	0.047	0.000	0.33
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.047	0.093	0.047	0.233	0.140	0.093	0.000	0.65
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.186	0.233	0.419	0.326	0.372	0.233	0.000	1.77
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.093	0.093	0.233	0.419	0.186	0.233	0.000	1.26

Total 5.81

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	2	7	14	20	17	14	9	2	85
11.25 - 33.75	NNE	0	1	1	3	21	25	13	2	3	2	4	75
33.75 - 56.25	NE	0	0	2	2	10	14	6	1	1	2	3	41
56.25 - 78.75	ENE	0	0	1	5	9	8	2	3	5	0	0	33
78.75 - 101.25	E	0	1	1	1	7	5	4	2	0	0	0	21
101.25 - 123.75	ESE	0	0	0	0	3	1	0	0	0	0	0	4
123.75 - 146.25	SE	0	0	1	1	5	11	9	12	5	1	0	45
146.25 - 168.75	SSE	0	0	0	0	3	6	5	4	5	0	0	23
168.75 - 191.25	S	0	0	1	1	8	5	5	10	15	0	0	45
191.25 - 213.75	SSW	0	1	0	1	2	6	3	2	0	0	0	15
213.75 - 236.25	SW	0	0	2	3	4	7	3	3	1	0	0	23
236.25 - 258.75	WSW	0	0	1	3	12	12	5	5	2	0	0	40
258.75 - 281.25	W	0	0	1	4	10	10	7	9	9	2	0	52
281.25 - 303.75	WNW	0	0	2	4	9	17	16	37	33	7	2	127
303.75 - 326.25	NW	0	1	0	0	7	25	41	48	57	24	3	206
326.25 - 348.75	NNW	0	1	0	4	10	14	21	26	21	10	0	107

Total 942

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.093	0.326	0.651	0.930	0.791	0.651	0.419	0.093	3.95
11.25 - 33.75	NNE	0.000	0.047	0.047	0.140	0.977	1.163	0.605	0.093	0.140	0.093	0.186	3.49
33.75 - 56.25	NE	0.000	0.000	0.093	0.093	0.465	0.651	0.279	0.047	0.047	0.093	0.140	1.91
56.25 - 78.75	ENE	0.000	0.000	0.047	0.233	0.419	0.372	0.093	0.140	0.233	0.000	0.000	1.53
78.75 - 101.25	E	0.000	0.047	0.047	0.047	0.326	0.233	0.186	0.093	0.000	0.000	0.000	0.98
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.140	0.047	0.000	0.000	0.000	0.000	0.000	0.19
123.75 - 146.25	SE	0.000	0.000	0.047	0.047	0.233	0.512	0.419	0.558	0.233	0.047	0.000	2.09
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.140	0.279	0.233	0.186	0.233	0.000	0.000	1.07
168.75 - 191.25	S	0.000	0.000	0.047	0.047	0.372	0.233	0.233	0.465	0.698	0.000	0.000	2.09
191.25 - 213.75	SSW	0.000	0.047	0.000	0.047	0.093	0.279	0.140	0.093	0.000	0.000	0.000	0.70
213.75 - 236.25	SW	0.000	0.000	0.093	0.140	0.186	0.326	0.140	0.140	0.047	0.000	0.000	1.07
236.25 - 258.75	WSW	0.000	0.000	0.047	0.140	0.558	0.558	0.233	0.233	0.093	0.000	0.000	1.86
258.75 - 281.25	W	0.000	0.000	0.047	0.186	0.465	0.465	0.326	0.419	0.419	0.093	0.000	2.42
281.25 - 303.75	WNW	0.000	0.000	0.093	0.186	0.419	0.791	0.744	1.721	1.535	0.326	0.093	5.91
303.75 - 326.25	NW	0.000	0.047	0.000	0.000	0.326	1.163	1.907	2.233	2.651	1.116	0.140	9.58
326.25 - 348.75	NNW	0.000	0.047	0.000	0.186	0.465	0.651	0.977	1.209	0.977	0.465	0.000	4.98

Total 43.81

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	1	1	4	10	8	11	9	8	3	0	55
11.25 - 33.75	NNE	0	0	2	1	12	15	3	1	0	0	1	35
33.75 - 56.25	NE	0	1	0	2	7	6	2	0	0	0	0	18
56.25 - 78.75	ENE	0	2	6	7	3	0	1	0	0	0	0	19
78.75 - 101.25	E	0	2	4	6	5	0	0	0	0	0	0	17
101.25 - 123.75	ESE	0	0	4	4	6	3	0	0	0	0	0	17
123.75 - 146.25	SE	0	0	1	0	7	9	4	7	1	2	0	31
146.25 - 168.75	SSE	0	1	1	0	7	6	3	9	0	0	0	27
168.75 - 191.25	S	0	0	1	1	3	4	5	5	1	1	0	21
191.25 - 213.75	SSW	0	0	0	2	6	3	4	5	3	1	0	24
213.75 - 236.25	SW	0	0	3	4	8	9	4	3	1	0	0	32
236.25 - 258.75	WSW	0	1	5	1	11	7	2	0	1	1	0	29
258.75 - 281.25	W	0	0	6	2	15	12	8	3	0	0	2	48
281.25 - 303.75	WNNW	0	0	1	2	26	27	10	3	2	0	0	71
303.75 - 326.25	NW	0	0	3	4	18	37	36	18	8	0	0	124
326.25 - 348.75	NNW	0	0	2	2	13	39	28	15	17	0	0	116

Total 684

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.047	0.047	0.186	0.465	0.372	0.512	0.419	0.372	0.140	0.000	2.56
11.25 - 33.75	NNE	0.000	0.000	0.093	0.047	0.558	0.698	0.140	0.047	0.000	0.000	0.047	1.63
33.75 - 56.25	NE	0.000	0.047	0.000	0.093	0.326	0.279	0.093	0.000	0.000	0.000	0.000	0.84
56.25 - 78.75	ENE	0.000	0.093	0.279	0.326	0.140	0.000	0.047	0.000	0.000	0.000	0.000	0.88
78.75 - 101.25	E	0.000	0.093	0.186	0.279	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.79
101.25 - 123.75	ESE	0.000	0.000	0.186	0.186	0.279	0.140	0.000	0.000	0.000	0.000	0.000	0.79
123.75 - 146.25	SE	0.000	0.000	0.047	0.000	0.326	0.419	0.186	0.326	0.047	0.093	0.000	1.44
146.25 - 168.75	SSE	0.000	0.047	0.047	0.000	0.326	0.279	0.140	0.419	0.000	0.000	0.000	1.26
168.75 - 191.25	S	0.000	0.000	0.047	0.047	0.140	0.186	0.233	0.233	0.047	0.047	0.000	0.98
191.25 - 213.75	SSW	0.000	0.000	0.000	0.093	0.279	0.140	0.186	0.233	0.140	0.047	0.000	1.12
213.75 - 236.25	SW	0.000	0.000	0.140	0.186	0.372	0.419	0.186	0.140	0.047	0.000	0.000	1.49
236.25 - 258.75	WSW	0.000	0.047	0.233	0.047	0.512	0.326	0.093	0.000	0.047	0.047	0.000	1.35
258.75 - 281.25	W	0.000	0.000	0.279	0.093	0.698	0.558	0.372	0.140	0.000	0.000	0.093	2.23
281.25 - 303.75	WNNW	0.000	0.000	0.047	0.093	1.209	1.256	0.465	0.140	0.093	0.000	0.000	3.30
303.75 - 326.25	NW	0.000	0.000	0.140	0.186	0.837	1.721	1.674	0.837	0.372	0.000	0.000	5.77
326.25 - 348.75	NNW	0.000	0.000	0.093	0.093	0.605	1.814	1.302	0.698	0.791	0.000	0.000	5.40

Total 31.81

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	5	3	1	0	0	0	0	9
11.25 - 33.75	NNE	0	0	0	1	6	3	0	0	0	0	0	10
33.75 - 56.25	NE	0	0	0	3	7	0	0	0	0	0	0	10
56.25 - 78.75	ENE	0	0	0	1	2	0	0	0	0	0	0	3
78.75 - 101.25	E	0	0	2	5	0	0	0	0	0	0	0	7
101.25 - 123.75	ESE	0	0	5	1	6	3	0	0	0	0	0	15
123.75 - 146.25	SE	0	1	1	3	8	7	3	2	9	2	0	36
146.25 - 168.75	SSE	0	1	1	4	4	5	0	0	0	0	0	15
168.75 - 191.25	S	0	0	2	1	2	0	0	0	0	3	4	12
191.25 - 213.75	SSW	0	0	0	2	1	1	1	0	2	2	0	9
213.75 - 236.25	SW	0	0	0	2	1	3	1	0	1	0	0	8
236.25 - 258.75	WSW	0	1	0	2	3	1	0	0	0	0	0	7
258.75 - 281.25	W	0	0	0	1	2	2	1	1	0	0	0	7
281.25 - 303.75	WNW	0	0	0	1	1	0	0	0	0	0	0	2
303.75 - 326.25	NW	0	0	2	1	2	0	0	0	0	0	0	5
326.25 - 348.75	NNW	0	0	1	1	7	2	1	0	0	0	0	12

Total 167

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.233	0.140	0.047	0.000	0.000	0.000	0.000	0.42
11.25 - 33.75	NNE	0.000	0.000	0.000	0.047	0.279	0.140	0.000	0.000	0.000	0.000	0.000	0.47
33.75 - 56.25	NE	0.000	0.000	0.000	0.140	0.326	0.000	0.000	0.000	0.000	0.000	0.000	0.47
56.25 - 78.75	ENE	0.000	0.000	0.000	0.047	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.14
78.75 - 101.25	E	0.000	0.000	0.093	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.33
101.25 - 123.75	ESE	0.000	0.000	0.233	0.047	0.279	0.140	0.000	0.000	0.000	0.000	0.000	0.70
123.75 - 146.25	SE	0.000	0.047	0.047	0.140	0.372	0.326	0.140	0.093	0.419	0.093	0.000	1.67
146.25 - 168.75	SSE	0.000	0.047	0.047	0.186	0.186	0.233	0.000	0.000	0.000	0.000	0.000	0.70
168.75 - 191.25	S	0.000	0.000	0.093	0.047	0.093	0.000	0.000	0.000	0.000	0.140	0.186	0.56
191.25 - 213.75	SSW	0.000	0.000	0.000	0.093	0.047	0.047	0.047	0.000	0.093	0.093	0.000	0.42
213.75 - 236.25	SW	0.000	0.000	0.000	0.093	0.047	0.140	0.047	0.000	0.047	0.000	0.000	0.37
236.25 - 258.75	WSW	0.000	0.047	0.000	0.093	0.140	0.047	0.000	0.000	0.000	0.000	0.000	0.33
258.75 - 281.25	W	0.000	0.000	0.000	0.047	0.093	0.093	0.047	0.047	0.000	0.000	0.000	0.33
281.25 - 303.75	WNW	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.09
303.75 - 326.25	NW	0.000	0.000	0.093	0.047	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.23
326.25 - 348.75	NNW	0.000	0.000	0.047	0.047	0.326	0.093	0.047	0.000	0.000	0.000	0.000	0.56

Total 7.77

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	1	1	0	0	0	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	0	1	0	0	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	5	0	0	0	0	0	0	5
56.25 - 78.75	ENE	0	0	1	2	1	0	0	0	0	0	0	4
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	1	1	3	2	0	0	0	0	0	7
123.75 - 146.25	SE	0	0	0	1	1	6	8	3	7	0	0	26
146.25 - 168.75	SSE	0	0	0	0	0	1	0	0	1	1	0	3
168.75 - 191.25	S	0	0	0	0	0	0	0	0	1	0	0	1
191.25 - 213.75	SSW	0	0	1	0	0	0	0	0	0	1	0	2
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	1	0	0	0	0	0	0	0	0	0	1

Total 52

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.23
56.25 - 78.75	ENE	0.000	0.000	0.047	0.093	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.19
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.047	0.047	0.140	0.093	0.000	0.000	0.000	0.000	0.000	0.33
123.75 - 146.25	SE	0.000	0.000	0.000	0.047	0.047	0.279	0.372	0.140	0.326	0.000	0.000	1.21
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047	0.047	0.000	0.14
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05

Total 2.42

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	2	6	22	27	33	32	27	14	2	167
11.25 - 33.75	NNE	0	1	3	5	39	45	17	4	4	2	5	125
33.75 - 56.25	NE	0	1	2	7	31	20	8	1	1	2	3	76
56.25 - 78.75	ENE	0	2	8	15	15	8	3	3	5	0	0	59
78.75 - 101.25	E	0	3	7	12	15	7	5	2	0	0	0	51
101.25 - 123.75	ESE	0	0	10	6	19	10	0	1	0	0	0	46
123.75 - 146.25	SE	0	1	3	5	24	35	24	26	22	5	0	145
146.25 - 168.75	SSE	0	2	2	4	14	18	8	13	6	1	0	68
168.75 - 191.25	S	0	0	4	3	14	9	11	15	17	4	4	81
191.25 - 213.75	SSW	0	1	1	5	9	10	8	7	5	4	0	50
213.75 - 236.25	SW	0	0	5	9	17	19	8	7	3	0	0	68
236.25 - 258.75	WSW	0	2	6	6	28	22	9	8	10	1	0	92
258.75 - 281.25	W	0	0	7	7	30	29	22	17	16	5	3	136
281.25 - 303.75	WNW	0	0	3	7	37	48	30	55	58	10	2	250
303.75 - 326.25	NW	0	1	5	5	32	70	93	84	100	39	3	432
326.25 - 348.75	NNW	0	2	3	7	32	58	64	60	56	20	2	304

Total 2,150

MISSING HOURS: 10
 JOINT DATA RECOVERY: 99.5%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2013 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.093	0.093	0.279	1.023	1.256	1.535	1.488	1.256	0.651	0.093	7.77
11.25 - 33.75	NNE	0.000	0.047	0.140	0.233	1.814	2.093	0.791	0.186	0.186	0.093	0.233	5.81
33.75 - 56.25	NE	0.000	0.047	0.093	0.326	1.442	0.930	0.372	0.047	0.047	0.093	0.140	3.53
56.25 - 78.75	ENE	0.000	0.093	0.372	0.698	0.698	0.372	0.140	0.140	0.233	0.000	0.000	2.74
78.75 - 101.25	E	0.000	0.140	0.326	0.558	0.698	0.326	0.233	0.093	0.000	0.000	0.000	2.37
101.25 - 123.75	ESE	0.000	0.000	0.465	0.279	0.884	0.465	0.000	0.047	0.000	0.000	0.000	2.14
123.75 - 146.25	SE	0.000	0.047	0.140	0.233	1.116	1.628	1.116	1.209	1.023	0.233	0.000	6.74
146.25 - 168.75	SSE	0.000	0.093	0.093	0.186	0.651	0.837	0.372	0.605	0.279	0.047	0.000	3.16
168.75 - 191.25	S	0.000	0.000	0.186	0.140	0.651	0.419	0.512	0.698	0.791	0.186	0.186	3.77
191.25 - 213.75	SSW	0.000	0.047	0.047	0.233	0.419	0.465	0.372	0.326	0.233	0.186	0.000	2.33
213.75 - 236.25	SW	0.000	0.000	0.233	0.419	0.791	0.884	0.372	0.326	0.140	0.000	0.000	3.16
236.25 - 258.75	WSW	0.000	0.093	0.279	0.279	1.302	1.023	0.419	0.372	0.465	0.047	0.000	4.28
258.75 - 281.25	W	0.000	0.000	0.326	0.326	1.395	1.349	1.023	0.791	0.744	0.233	0.140	6.33
281.25 - 303.75	WNW	0.000	0.000	0.140	0.326	1.721	2.233	1.395	2.558	2.698	0.465	0.093	11.63
303.75 - 326.25	NW	0.000	0.047	0.233	0.233	1.488	3.256	4.326	3.907	4.651	1.814	0.140	20.09
326.25 - 348.75	NNW	0.000	0.093	0.140	0.326	1.488	2.698	2.977	2.791	2.605	0.930	0.093	14.14

Total 100.00

MISSING HOURS: 10
 JOINT DATA RECOVERY: 99.5%

Salem/Hope Creek Meteorological Tower
Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class
33 Ft. Wind Level
300 – 33 Ft. Delta Temperature
April – June 2013

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2013 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	1	0	4	0	4	0	0	0	9
11.25 - 33.75	NNE	0	0	0	0	2	1	2	3	1	0	0	9
33.75 - 56.25	NE	0	0	0	0	1	0	4	2	0	0	0	7
56.25 - 78.75	ENE	0	0	0	0	1	7	6	2	0	0	0	16
78.75 - 101.25	E	0	0	0	0	0	6	5	1	0	0	0	12
101.25 - 123.75	ESE	0	0	0	0	0	4	6	0	0	0	0	10
123.75 - 146.25	SE	0	0	0	0	0	0	3	3	7	0	0	13
146.25 - 168.75	SSE	0	0	0	0	0	2	0	1	2	0	0	5
168.75 - 191.25	S	0	0	0	0	0	0	1	0	0	0	0	1
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	1	0	0	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	4	0	1	0	0	0	5
258.75 - 281.25	W	0	0	0	0	0	3	7	3	0	0	0	13
281.25 - 303.75	WNW	0	0	0	0	0	1	4	5	14	0	0	24
303.75 - 326.25	NW	0	0	0	0	0	1	3	10	8	4	0	26
326.25 - 348.75	NNW	0	0	0	0	0	6	2	3	0	1	0	12

Total 163

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2013 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.049	0.000	0.195	0.000	0.195	0.000	0.000	0.000	0.44
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.098	0.049	0.098	0.146	0.049	0.000	0.000	0.44
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.049	0.000	0.195	0.098	0.000	0.000	0.000	0.34
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.049	0.342	0.293	0.098	0.000	0.000	0.000	0.78
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.293	0.244	0.049	0.000	0.000	0.000	0.59
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.195	0.293	0.000	0.000	0.000	0.000	0.49
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.146	0.146	0.342	0.000	0.000	0.63
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.098	0.000	0.049	0.098	0.000	0.000	0.24
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.05
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.195	0.000	0.049	0.000	0.000	0.000	0.24
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.146	0.342	0.146	0.000	0.000	0.000	0.63
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.049	0.195	0.244	0.683	0.000	0.000	1.17
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.049	0.146	0.488	0.390	0.195	0.000	1.27
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.293	0.098	0.146	0.000	0.049	0.000	0.59

Total 7.96

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	1	1	4	1	2	0	0	0	9
11.25 - 33.75	NNE	0	0	0	0	0	0	2	2	1	0	0	5
33.75 - 56.25	NE	0	0	0	0	2	1	0	0	0	0	0	3
56.25 - 78.75	ENE	0	0	0	0	3	2	2	0	0	0	0	7
78.75 - 101.25	E	0	0	0	0	0	2	3	1	0	0	0	6
101.25 - 123.75	ESE	0	0	0	0	0	0	1	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	0	1	0	1	10	0	0	12
146.25 - 168.75	SSE	0	0	0	0	0	2	1	2	3	0	0	8
168.75 - 191.25	S	0	0	0	0	0	0	1	0	0	0	0	1
191.25 - 213.75	SSW	0	0	0	0	0	1	0	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	2	2	0	0	0	0	0	4
236.25 - 258.75	WSW	0	0	0	0	2	1	1	1	0	0	0	5
258.75 - 281.25	W	0	0	0	0	0	2	1	1	1	0	0	5
281.25 - 303.75	WNW	0	0	0	0	3	1	0	3	1	0	0	8
303.75 - 326.25	NW	0	0	0	0	0	2	1	2	3	1	0	9
326.25 - 348.75	NNW	0	0	0	0	0	2	2	1	2	0	0	7

Total 91

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.049	0.049	0.195	0.049	0.098	0.000	0.000	0.000	0.44
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.098	0.098	0.049	0.000	0.000	0.24
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.098	0.049	0.000	0.000	0.000	0.000	0.000	0.15
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.146	0.098	0.098	0.000	0.000	0.000	0.000	0.34
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.098	0.146	0.049	0.000	0.000	0.000	0.29
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.049	0.488	0.000	0.000	0.59
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.098	0.049	0.098	0.146	0.000	0.000	0.39
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.098	0.098	0.000	0.000	0.000	0.000	0.000	0.20
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.098	0.049	0.049	0.049	0.000	0.000	0.000	0.24
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.098	0.049	0.049	0.049	0.000	0.000	0.24
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.146	0.049	0.000	0.146	0.049	0.000	0.000	0.39
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.098	0.049	0.098	0.146	0.049	0.000	0.44
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.098	0.098	0.049	0.098	0.000	0.000	0.34

Total 4.44

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	1	2	1	1	1	0	0	6
11.25 - 33.75	NNE	0	0	0	0	0	1	4	2	0	0	0	7
33.75 - 56.25	NE	0	0	0	0	0	3	3	1	0	0	0	7
56.25 - 78.75	ENE	0	0	0	0	0	2	2	0	0	0	0	4
78.75 - 101.25	E	0	0	0	0	0	2	0	0	0	0	0	2
101.25 - 123.75	ESE	0	0	0	0	0	0	2	0	0	0	0	2
123.75 - 146.25	SE	0	0	0	0	0	1	2	2	1	1	0	7
146.25 - 168.75	SSE	0	0	0	0	1	2	2	0	3	1	0	9
168.75 - 191.25	S	0	0	0	0	3	0	1	0	0	0	0	4
191.25 - 213.75	SSW	0	0	0	0	1	2	0	0	0	0	0	3
213.75 - 236.25	SW	0	0	0	0	3	2	0	0	0	0	0	5
236.25 - 258.75	WSW	0	0	0	0	2	3	1	0	0	0	0	6
258.75 - 281.25	W	0	0	0	0	2	2	0	1	1	0	0	6
281.25 - 303.75	WNW	0	0	0	0	1	1	1	2	2	0	0	7
303.75 - 326.25	NW	0	0	0	1	1	2	0	2	2	1	0	9
326.25 - 348.75	NNW	0	0	0	0	3	5	1	2	0	0	0	11

Total 95

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.049	0.098	0.049	0.049	0.049	0.000	0.000	0.29
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.049	0.195	0.098	0.000	0.000	0.000	0.34
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.146	0.146	0.049	0.000	0.000	0.000	0.34
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.098	0.098	0.000	0.000	0.000	0.000	0.20
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.098	0.000	0.000	0.000	0.000	0.000	0.10
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.098	0.000	0.000	0.000	0.000	0.10
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.049	0.098	0.098	0.049	0.049	0.000	0.34
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.049	0.098	0.098	0.000	0.146	0.049	0.000	0.44
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.146	0.000	0.049	0.000	0.000	0.000	0.000	0.20
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.049	0.098	0.000	0.000	0.000	0.000	0.000	0.15
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.146	0.098	0.000	0.000	0.000	0.000	0.000	0.24
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.098	0.146	0.049	0.000	0.000	0.000	0.000	0.29
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.098	0.098	0.000	0.049	0.049	0.000	0.000	0.29
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.049	0.049	0.049	0.098	0.098	0.000	0.000	0.34
303.75 - 326.25	NW	0.000	0.000	0.000	0.049	0.049	0.098	0.000	0.098	0.098	0.049	0.000	0.44
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.146	0.244	0.049	0.098	0.000	0.000	0.000	0.54

Total 4.64

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	1	0	1	1	1	4	7	8	0	0	23
11.25 - 33.75	NNE	0	0	1	2	4	2	7	5	0	0	0	21
33.75 - 56.25	NE	0	0	3	3	12	16	8	5	0	0	0	47
56.25 - 78.75	ENE	0	2	2	5	11	13	10	3	0	0	0	46
78.75 - 101.25	E	0	0	2	3	11	11	2	0	0	0	0	29
101.25 - 123.75	ESE	0	1	3	2	7	13	6	5	1	0	0	38
123.75 - 146.25	SE	0	0	1	2	5	8	31	25	39	7	0	118
146.25 - 168.75	SSE	0	0	1	1	12	11	5	22	30	2	0	84
168.75 - 191.25	S	0	0	0	9	15	12	14	11	6	1	0	68
191.25 - 213.75	SSW	0	0	0	4	22	11	11	9	0	0	0	57
213.75 - 236.25	SW	0	0	3	6	17	12	12	7	1	0	0	58
236.25 - 258.75	WSW	0	0	3	4	16	22	18	5	0	0	0	68
258.75 - 281.25	W	0	0	0	1	7	7	4	4	3	0	0	26
281.25 - 303.75	WNW	0	0	1	0	4	5	6	5	7	0	0	28
303.75 - 326.25	NW	0	1	0	1	7	7	8	5	21	8	0	58
326.25 - 348.75	NNW	0	0	1	1	0	4	2	2	8	2	0	20

Total 789

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.049	0.000	0.049	0.049	0.049	0.195	0.342	0.390	0.000	0.000	1.12
11.25 - 33.75	NNE	0.000	0.000	0.049	0.098	0.195	0.098	0.342	0.244	0.000	0.000	0.000	1.02
33.75 - 56.25	NE	0.000	0.000	0.146	0.146	0.586	0.781	0.390	0.244	0.000	0.000	0.000	2.29
56.25 - 78.75	ENE	0.000	0.098	0.098	0.244	0.537	0.634	0.488	0.146	0.000	0.000	0.000	2.24
78.75 - 101.25	E	0.000	0.000	0.098	0.146	0.537	0.537	0.098	0.000	0.000	0.000	0.000	1.42
101.25 - 123.75	ESE	0.000	0.049	0.146	0.098	0.342	0.634	0.293	0.244	0.049	0.000	0.000	1.85
123.75 - 146.25	SE	0.000	0.000	0.049	0.098	0.244	0.390	1.513	1.220	1.903	0.342	0.000	5.76
146.25 - 168.75	SSE	0.000	0.000	0.049	0.049	0.586	0.537	0.244	1.074	1.464	0.098	0.000	4.10
168.75 - 191.25	S	0.000	0.000	0.000	0.439	0.732	0.586	0.683	0.537	0.293	0.049	0.000	3.32
191.25 - 213.75	SSW	0.000	0.000	0.000	0.195	1.074	0.537	0.537	0.439	0.000	0.000	0.000	2.78
213.75 - 236.25	SW	0.000	0.000	0.146	0.293	0.830	0.586	0.586	0.342	0.049	0.000	0.000	2.83
236.25 - 258.75	WSW	0.000	0.000	0.146	0.195	0.781	1.074	0.878	0.244	0.000	0.000	0.000	3.32
258.75 - 281.25	W	0.000	0.000	0.000	0.049	0.342	0.342	0.195	0.195	0.146	0.000	0.000	1.27
281.25 - 303.75	WNW	0.000	0.000	0.049	0.000	0.195	0.244	0.293	0.244	0.342	0.000	0.000	1.37
303.75 - 326.25	NW	0.000	0.049	0.000	0.049	0.342	0.342	0.390	0.244	1.025	0.390	0.000	2.83
326.25 - 348.75	NNW	0.000	0.000	0.049	0.049	0.000	0.195	0.098	0.098	0.390	0.098	0.000	0.98

Total 38.51

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	1	0	6	4	6	3	4	0	0	24
11.25 - 33.75	NNE	0	1	3	2	4	11	3	1	1	0	0	26
33.75 - 56.25	NE	0	1	1	3	9	3	1	0	0	0	0	18
56.25 - 78.75	ENE	0	0	4	6	12	2	0	0	0	0	0	24
78.75 - 101.25	E	0	1	6	5	12	1	0	0	0	0	0	25
101.25 - 123.75	ESE	0	1	3	3	19	11	3	0	0	0	0	40
123.75 - 146.25	SE	0	0	2	4	9	12	9	9	1	9	10	65
146.25 - 168.75	SSE	0	0	1	5	15	8	5	3	1	0	0	38
168.75 - 191.25	S	0	2	4	3	15	7	6	11	4	1	0	53
191.25 - 213.75	SSW	0	1	1	7	17	9	6	2	3	0	0	46
213.75 - 236.25	SW	0	2	5	4	36	11	13	2	1	0	0	74
236.25 - 258.75	WSW	0	0	5	6	17	7	6	2	1	0	0	44
258.75 - 281.25	W	0	1	2	3	13	12	3	2	0	0	0	36
281.25 - 303.75	WNW	0	3	2	6	7	8	13	0	0	0	0	39
303.75 - 326.25	NW	0	0	3	1	9	11	10	7	3	0	0	44
326.25 - 348.75	NNW	0	0	0	4	8	18	6	7	6	0	0	49

Total 645

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.049	0.000	0.293	0.195	0.293	0.146	0.195	0.000	0.000	1.17
11.25 - 33.75	NNE	0.000	0.049	0.146	0.098	0.195	0.537	0.146	0.049	0.049	0.000	0.000	1.27
33.75 - 56.25	NE	0.000	0.049	0.049	0.146	0.439	0.146	0.049	0.000	0.000	0.000	0.000	0.88
56.25 - 78.75	ENE	0.000	0.000	0.195	0.293	0.586	0.098	0.000	0.000	0.000	0.000	0.000	1.17
78.75 - 101.25	E	0.000	0.049	0.293	0.244	0.586	0.049	0.000	0.000	0.000	0.000	0.000	1.22
101.25 - 123.75	ESE	0.000	0.049	0.146	0.146	0.927	0.537	0.146	0.000	0.000	0.000	0.000	1.95
123.75 - 146.25	SE	0.000	0.000	0.098	0.195	0.439	0.586	0.439	0.439	0.927	0.049	0.000	3.17
146.25 - 168.75	SSE	0.000	0.000	0.049	0.244	0.732	0.390	0.244	0.146	0.049	0.000	0.000	1.85
168.75 - 191.25	S	0.000	0.098	0.195	0.146	0.732	0.342	0.293	0.537	0.195	0.049	0.000	2.59
191.25 - 213.75	SSW	0.000	0.049	0.049	0.342	0.830	0.439	0.293	0.098	0.146	0.000	0.000	2.24
213.75 - 236.25	SW	0.000	0.098	0.244	0.195	1.757	0.537	0.634	0.098	0.049	0.000	0.000	3.61
236.25 - 258.75	WSW	0.000	0.000	0.244	0.293	0.830	0.342	0.293	0.098	0.049	0.000	0.000	2.15
258.75 - 281.25	W	0.000	0.049	0.098	0.146	0.634	0.586	0.146	0.098	0.000	0.000	0.000	1.76
281.25 - 303.75	WNW	0.000	0.146	0.098	0.293	0.342	0.390	0.634	0.000	0.000	0.000	0.000	1.90
303.75 - 326.25	NW	0.000	0.000	0.146	0.049	0.439	0.537	0.488	0.342	0.146	0.000	0.000	2.15
326.25 - 348.75	NNW	0.000	0.000	0.000	0.195	0.390	0.878	0.293	0.342	0.293	0.000	0.000	2.39

Total 31.48

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	1	0	3	4	2	0	0	0	0	0	10
11.25 - 33.75	NNE	0	2	0	2	3	2	2	0	0	0	0	11
33.75 - 56.25	NE	0	1	2	2	3	2	1	0	0	0	0	11
56.25 - 78.75	ENE	0	0	1	0	2	1	0	0	0	0	0	4
78.75 - 101.25	E	0	0	3	3	0	0	0	0	0	0	0	6
101.25 - 123.75	ESE	0	1	0	1	3	0	0	0	0	0	0	5
123.75 - 146.25	SE	0	0	1	1	3	8	9	13	4	0	0	39
146.25 - 168.75	SSE	0	0	0	2	8	4	5	0	1	1	0	21
168.75 - 191.25	S	0	0	2	1	3	7	2	1	1	2	0	19
191.25 - 213.75	SSW	0	0	2	0	3	2	1	0	0	0	0	8
213.75 - 236.25	SW	0	0	2	5	11	2	2	0	0	0	0	22
236.25 - 258.75	WSW	0	1	5	3	10	4	2	0	0	0	0	25
258.75 - 281.25	W	0	0	0	2	0	2	0	0	0	0	0	4
281.25 - 303.75	WNNW	0	0	1	1	1	0	0	0	0	0	0	3
303.75 - 326.25	NW	0	0	0	3	7	1	1	0	0	0	0	12
326.25 - 348.75	NNW	0	0	0	0	5	2	0	0	0	0	0	7

Total 207

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.049	0.000	0.146	0.195	0.098	0.000	0.000	0.000	0.000	0.000	0.49
11.25 - 33.75	NNE	0.000	0.098	0.000	0.098	0.146	0.098	0.098	0.000	0.000	0.000	0.000	0.54
33.75 - 56.25	NE	0.000	0.049	0.098	0.098	0.146	0.098	0.049	0.000	0.000	0.000	0.000	0.54
56.25 - 78.75	ENE	0.000	0.000	0.049	0.000	0.098	0.049	0.000	0.000	0.000	0.000	0.000	0.20
78.75 - 101.25	E	0.000	0.000	0.146	0.146	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.29
101.25 - 123.75	ESE	0.000	0.049	0.000	0.049	0.146	0.000	0.000	0.000	0.000	0.000	0.000	0.24
123.75 - 146.25	SE	0.000	0.000	0.049	0.049	0.146	0.390	0.439	0.634	0.195	0.000	0.000	1.90
146.25 - 168.75	SSE	0.000	0.000	0.000	0.098	0.390	0.195	0.244	0.000	0.049	0.049	0.000	1.02
168.75 - 191.25	S	0.000	0.000	0.098	0.049	0.146	0.342	0.098	0.049	0.049	0.098	0.000	0.93
191.25 - 213.75	SSW	0.000	0.000	0.098	0.000	0.146	0.098	0.049	0.000	0.000	0.000	0.000	0.39
213.75 - 236.25	SW	0.000	0.000	0.098	0.244	0.537	0.098	0.098	0.000	0.000	0.000	0.000	1.07
236.25 - 258.75	WSW	0.000	0.049	0.244	0.146	0.488	0.195	0.098	0.000	0.000	0.000	0.000	1.22
258.75 - 281.25	W	0.000	0.000	0.000	0.098	0.000	0.098	0.000	0.000	0.000	0.000	0.000	0.20
281.25 - 303.75	WNNW	0.000	0.000	0.049	0.049	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.15
303.75 - 326.25	NW	0.000	0.000	0.000	0.146	0.342	0.049	0.049	0.000	0.000	0.000	0.000	0.59
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.244	0.098	0.000	0.000	0.000	0.000	0.000	0.34

Total 10.10

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	2	0	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	1	1	1	0	0	0	0	0	3
56.25 - 78.75	ENE	0	0	0	0	1	0	0	0	0	0	0	1
78.75 - 101.25	E	0	0	1	2	1	0	0	0	0	0	0	4
101.25 - 123.75	ESE	0	0	0	1	0	0	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	2	2	6	7	3	4	0	0	24
146.25 - 168.75	SSE	0	0	0	0	3	2	3	3	2	0	0	13
168.75 - 191.25	S	0	0	0	0	0	0	3	0	0	0	0	3
191.25 - 213.75	SSW	0	0	0	0	1	1	2	3	0	0	0	7
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	1	0	0	0	0	0	0	0	0	0	1

Total 59

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.098	0.000	0.000	0.000	0.000	0.000	0.000	0.10
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.049	0.049	0.049	0.000	0.000	0.000	0.000	0.000	0.15
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.049	0.098	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.20
101.25 - 123.75	ESE	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.098	0.098	0.293	0.342	0.146	0.195	0.000	0.000	1.17
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.146	0.098	0.146	0.146	0.098	0.000	0.000	0.63
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.146	0.000	0.000	0.000	0.000	0.15
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.049	0.049	0.098	0.146	0.000	0.000	0.000	0.34
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05

Total 2.88

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	1	6	15	17	12	17	13	0	0	83
11.25 - 33.75	NNE	0	3	4	6	13	17	20	13	3	0	0	79
33.75 - 56.25	NE	0	2	6	9	28	26	17	8	0	0	0	96
56.25 - 78.75	ENE	0	2	7	11	30	27	20	5	0	0	0	102
78.75 - 101.25	E	0	1	12	13	24	22	10	2	0	0	0	84
101.25 - 123.75	ESE	0	3	6	7	29	28	18	5	1	0	0	97
123.75 - 146.25	SE	0	0	4	9	20	35	61	56	84	9	0	278
146.25 - 168.75	SSE	0	0	2	8	39	31	21	31	42	4	0	178
168.75 - 191.25	S	0	2	6	13	36	26	28	23	11	4	0	149
191.25 - 213.75	SSW	0	1	3	11	44	26	20	14	3	0	0	122
213.75 - 236.25	SW	0	2	10	15	70	29	27	9	2	0	0	164
236.25 - 258.75	WSW	0	1	13	13	47	41	28	9	1	0	0	153
258.75 - 281.25	W	0	1	2	6	22	28	15	11	5	0	0	90
281.25 - 303.75	WNV	0	3	4	7	16	16	24	15	24	0	0	109
303.75 - 326.25	NW	0	1	3	6	24	24	23	26	37	14	0	158
326.25 - 348.75	NNW	0	1	1	5	16	37	13	15	16	3	0	107

Total 2,049

MISSING HOURS: 135
JOINT DATA RECOVERY: 93.8%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2013 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.098	0.049	0.293	0.732	0.830	0.586	0.830	0.634	0.000	0.000	4.05
11.25 - 33.75	NNE	0.000	0.146	0.195	0.293	0.634	0.830	0.976	0.634	0.146	0.000	0.000	3.86
33.75 - 56.25	NE	0.000	0.098	0.293	0.439	1.367	1.269	0.830	0.390	0.000	0.000	0.000	4.69
56.25 - 78.75	ENE	0.000	0.098	0.342	0.537	1.464	1.318	0.976	0.244	0.000	0.000	0.000	4.98
78.75 - 101.25	E	0.000	0.049	0.586	0.634	1.171	1.074	0.488	0.098	0.000	0.000	0.000	4.10
101.25 - 123.75	ESE	0.000	0.146	0.293	0.342	1.415	1.367	0.878	0.244	0.049	0.000	0.000	4.73
123.75 - 146.25	SE	0.000	0.000	0.195	0.439	0.976	1.708	2.977	2.733	4.100	0.439	0.000	13.57
146.25 - 168.75	SSE	0.000	0.000	0.098	0.390	1.903	1.513	1.025	1.513	2.050	0.195	0.000	8.69
168.75 - 191.25	S	0.000	0.098	0.293	0.634	1.757	1.269	1.367	1.122	0.537	0.195	0.000	7.27
191.25 - 213.75	SSW	0.000	0.049	0.146	0.537	2.147	1.269	0.976	0.683	0.146	0.000	0.000	5.95
213.75 - 236.25	SW	0.000	0.098	0.488	0.732	3.416	1.415	1.318	0.439	0.098	0.000	0.000	8.00
236.25 - 258.75	WSW	0.000	0.049	0.634	0.634	2.294	2.001	1.367	0.439	0.049	0.000	0.000	7.47
258.75 - 281.25	W	0.000	0.049	0.098	0.293	1.074	1.367	0.732	0.537	0.244	0.000	0.000	4.39
281.25 - 303.75	WNV	0.000	0.146	0.195	0.342	0.781	0.781	1.171	0.732	1.171	0.000	0.000	5.32
303.75 - 326.25	NW	0.000	0.049	0.146	0.293	1.171	1.171	1.122	1.269	1.806	0.683	0.000	7.71
326.25 - 348.75	NNW	0.000	0.049	0.049	0.244	0.781	1.806	0.634	0.732	0.781	0.146	0.000	5.22

Total 100.00

MISSING HOURS: 135
JOINT DATA RECOVERY: 93.8%

Salem/Hope Creek Meteorological Tower
Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class
33 Ft. Wind Level
300 – 33 Ft. Delta Temperature
July – September 2013

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2013 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	0	1	0	0	0	0	0	1
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	0	0	1	1	0	0	0	0	2
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	2	1	1	0	0	0	4
146.25 - 168.75	SSE	0	0	0	1	2	2	2	1	0	0	0	8
168.75 - 191.25	S	0	0	0	0	0	2	0	0	0	0	0	2
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	2	2	0	0	0	0	0	4
236.25 - 258.75	WSW	0	0	0	0	0	1	0	0	0	0	0	1
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	1	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	0	0	0	1	3	0	0	0	0	0	4
326.25 - 348.75	NNW	0	0	0	0	0	1	0	0	0	0	0	1

Total 28

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2013 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.09
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.092	0.046	0.046	0.000	0.000	0.000	0.18
146.25 - 168.75	SSE	0.000	0.000	0.000	0.046	0.092	0.092	0.092	0.046	0.000	0.000	0.000	0.37
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.09
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.18
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.138	0.000	0.000	0.000	0.000	0.000	0.18
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05

Total 1.28

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2013 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	1	0	0	2	0	0	0	0	3
11.25 - 33.75	NNE	0	0	0	0	0	1	1	0	0	0	0	2
33.75 - 56.25	NE	0	0	0	0	1	1	2	0	0	0	0	4
56.25 - 78.75	ENE	0	0	0	0	3	0	0	0	0	0	0	3
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	1	1	1	1	0	0	4
146.25 - 168.75	SSE	0	0	0	0	9	5	1	0	2	0	0	17
168.75 - 191.25	S	0	0	0	0	2	0	0	2	0	0	0	4
191.25 - 213.75	SSW	0	0	0	0	4	1	0	0	0	0	0	5
213.75 - 236.25	SW	0	0	0	0	2	0	0	1	0	0	0	3
236.25 - 258.75	WSW	0	0	0	0	0	3	1	1	0	0	0	5
258.75 - 281.25	W	0	0	0	0	2	0	0	0	0	0	0	2
281.25 - 303.75	WNW	0	0	0	0	0	2	0	0	0	0	0	2
303.75 - 326.25	NW	0	0	0	0	3	0	2	2	3	0	0	10
326.25 - 348.75	NNW	0	0	0	0	0	5	1	1	0	0	0	7

Total 72

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2013 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.046	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.14
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.09
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.046	0.092	0.000	0.000	0.000	0.000	0.18
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.14
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.046	0.046	0.000	0.000	0.18
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.413	0.229	0.046	0.000	0.092	0.000	0.000	0.78
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.092	0.000	0.000	0.000	0.18
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.184	0.046	0.000	0.000	0.000	0.000	0.000	0.23
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.046	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.138	0.046	0.046	0.000	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.09
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.09
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.138	0.000	0.092	0.092	0.138	0.000	0.000	0.46
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.229	0.046	0.046	0.000	0.000	0.000	0.32

Total 3.30

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	7	6	4	1	0	0	0	18
11.25 - 33.75	NNE	0	0	1	0	2	2	1	0	0	0	0	6
33.75 - 56.25	NE	0	0	1	0	2	5	6	1	0	0	0	15
56.25 - 78.75	ENE	0	0	0	0	4	1	0	0	0	0	0	5
78.75 - 101.25	E	0	0	0	1	2	0	0	0	0	0	0	3
101.25 - 123.75	ESE	0	0	0	2	1	0	0	0	0	0	0	3
123.75 - 146.25	SE	0	0	0	0	0	4	0	0	2	1	0	7
146.25 - 168.75	SSE	0	0	0	4	4	1	4	5	1	1	0	20
168.75 - 191.25	S	0	0	0	2	5	2	0	3	1	0	0	13
191.25 - 213.75	SSW	0	0	0	1	3	4	0	1	0	0	0	9
213.75 - 236.25	SW	0	0	0	1	5	4	1	0	0	0	0	11
236.25 - 258.75	WSW	0	0	0	0	2	3	0	1	0	0	0	6
258.75 - 281.25	W	0	0	0	0	2	1	0	0	0	0	0	3
281.25 - 303.75	WNW	0	0	0	1	2	2	0	0	0	0	0	5
303.75 - 326.25	NW	0	0	1	1	4	0	6	2	0	0	0	14
326.25 - 348.75	NNW	0	0	2	1	5	10	6	3	0	0	0	27

Total 165

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.321	0.275	0.184	0.046	0.000	0.000	0.000	0.83
11.25 - 33.75	NNE	0.000	0.000	0.046	0.000	0.092	0.092	0.046	0.000	0.000	0.000	0.000	0.28
33.75 - 56.25	NE	0.000	0.000	0.046	0.000	0.092	0.229	0.275	0.046	0.000	0.000	0.000	0.69
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.184	0.046	0.000	0.000	0.000	0.000	0.000	0.23
78.75 - 101.25	E	0.000	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.14
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.184	0.000	0.000	0.092	0.046	0.000	0.32
146.25 - 168.75	SSE	0.000	0.000	0.000	0.184	0.184	0.046	0.184	0.229	0.046	0.046	0.000	0.92
168.75 - 191.25	S	0.000	0.000	0.000	0.092	0.229	0.092	0.000	0.138	0.046	0.000	0.000	0.60
191.25 - 213.75	SSW	0.000	0.000	0.000	0.046	0.138	0.184	0.000	0.046	0.000	0.000	0.000	0.41
213.75 - 236.25	SW	0.000	0.000	0.000	0.046	0.229	0.184	0.046	0.000	0.000	0.000	0.000	0.50
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.092	0.138	0.000	0.046	0.000	0.000	0.000	0.28
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.000	0.046	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.23
303.75 - 326.25	NW	0.000	0.000	0.046	0.046	0.184	0.000	0.275	0.092	0.000	0.000	0.000	0.64
326.25 - 348.75	NNW	0.000	0.000	0.092	0.046	0.229	0.459	0.275	0.138	0.000	0.000	0.000	1.24

Total 7.57

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	1	6	3	21	18	12	1	1	0	0	63
11.25 - 33.75	NNE	0	0	0	3	6	10	7	1	0	0	0	27
33.75 - 56.25	NE	0	1	0	0	8	12	8	0	0	0	0	29
56.25 - 78.75	ENE	0	0	2	1	10	3	0	0	0	0	0	16
78.75 - 101.25	E	0	1	2	3	3	3	0	0	0	0	0	12
101.25 - 123.75	ESE	0	2	0	0	4	2	0	0	0	0	0	8
123.75 - 146.25	SE	0	1	2	0	2	6	6	6	15	0	0	38
146.25 - 168.75	SSE	0	1	2	5	14	12	25	37	32	12	0	140
168.75 - 191.25	S	0	0	6	1	14	34	30	46	21	0	0	152
191.25 - 213.75	SSW	0	1	4	9	17	35	34	14	1	0	0	115
213.75 - 236.25	SW	0	1	4	10	21	54	38	6	0	0	0	134
236.25 - 258.75	WSW	0	0	4	10	28	27	16	4	0	0	0	89
258.75 - 281.25	W	0	0	3	2	15	14	7	1	0	0	0	42
281.25 - 303.75	WNW	0	1	4	2	9	6	1	0	0	0	0	23
303.75 - 326.25	NW	0	0	6	3	8	12	6	4	0	0	0	39
326.25 - 348.75	NNW	0	0	4	4	19	22	9	6	0	0	0	64

Total 991

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.046	0.275	0.138	0.964	0.826	0.551	0.046	0.046	0.000	0.000	2.89
11.25 - 33.75	NNE	0.000	0.000	0.000	0.138	0.275	0.459	0.321	0.046	0.000	0.000	0.000	1.24
33.75 - 56.25	NE	0.000	0.046	0.000	0.000	0.367	0.551	0.367	0.000	0.000	0.000	0.000	1.33
56.25 - 78.75	ENE	0.000	0.000	0.092	0.046	0.459	0.138	0.000	0.000	0.000	0.000	0.000	0.73
78.75 - 101.25	E	0.000	0.046	0.092	0.138	0.138	0.138	0.000	0.000	0.000	0.000	0.000	0.55
101.25 - 123.75	ESE	0.000	0.092	0.000	0.000	0.184	0.092	0.000	0.000	0.000	0.000	0.000	0.37
123.75 - 146.25	SE	0.000	0.046	0.092	0.000	0.092	0.275	0.275	0.275	0.688	0.000	0.000	1.74
146.25 - 168.75	SSE	0.000	0.046	0.092	0.229	0.642	0.551	1.147	1.698	1.469	0.551	0.000	6.42
168.75 - 191.25	S	0.000	0.000	0.275	0.046	0.642	1.560	1.377	2.111	0.964	0.000	0.000	6.98
191.25 - 213.75	SSW	0.000	0.046	0.184	0.413	0.780	1.606	1.560	0.642	0.046	0.000	0.000	5.28
213.75 - 236.25	SW	0.000	0.046	0.184	0.459	0.964	2.478	1.744	0.275	0.000	0.000	0.000	6.15
236.25 - 258.75	WSW	0.000	0.000	0.184	0.459	1.285	1.239	0.734	0.184	0.000	0.000	0.000	4.08
258.75 - 281.25	W	0.000	0.000	0.138	0.092	0.688	0.642	0.321	0.046	0.000	0.000	0.000	1.93
281.25 - 303.75	WNW	0.000	0.046	0.184	0.092	0.413	0.275	0.046	0.000	0.000	0.000	0.000	1.06
303.75 - 326.25	NW	0.000	0.000	0.275	0.138	0.367	0.551	0.275	0.184	0.000	0.000	0.000	1.79
326.25 - 348.75	NNW	0.000	0.000	0.184	0.184	0.872	1.010	0.413	0.275	0.000	0.000	0.000	2.94

Total 45.48

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	4	2	6	14	19	10	2	0	0	0	57
11.25 - 33.75	NNE	0	3	1	5	15	11	4	0	0	0	0	39
33.75 - 56.25	NE	0	2	4	6	18	8	0	0	0	0	0	38
56.25 - 78.75	ENE	0	5	12	8	2	2	1	0	0	0	0	30
78.75 - 101.25	E	0	6	6	2	2	0	0	0	0	0	0	16
101.25 - 123.75	ESE	0	2	0	8	21	4	1	0	0	0	0	36
123.75 - 146.25	SE	0	3	2	1	8	5	7	1	0	0	0	27
146.25 - 168.75	SSE	0	0	1	1	4	9	4	3	1	0	0	23
168.75 - 191.25	S	0	4	1	5	9	10	7	3	0	0	0	39
191.25 - 213.75	SSW	0	0	0	3	12	24	17	1	0	0	0	57
213.75 - 236.25	SW	0	3	3	9	37	39	7	1	0	0	0	99
236.25 - 258.75	WSW	0	3	3	6	44	29	4	1	0	0	0	90
258.75 - 281.25	W	0	3	6	2	24	7	0	0	0	0	0	42
281.25 - 303.75	WNW	0	1	3	6	10	4	2	1	0	0	0	27
303.75 - 326.25	NW	0	2	2	8	24	15	1	0	0	0	0	52
326.25 - 348.75	NNW	0	1	2	8	16	15	5	3	1	0	0	51

Total 723

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.184	0.092	0.275	0.642	0.872	0.459	0.092	0.000	0.000	0.000	2.62
11.25 - 33.75	NNE	0.000	0.138	0.046	0.229	0.688	0.505	0.184	0.000	0.000	0.000	0.000	1.79
33.75 - 56.25	NE	0.000	0.092	0.184	0.275	0.826	0.367	0.000	0.000	0.000	0.000	0.000	1.74
56.25 - 78.75	ENE	0.000	0.229	0.551	0.367	0.092	0.092	0.046	0.000	0.000	0.000	0.000	1.38
78.75 - 101.25	E	0.000	0.275	0.275	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.73
101.25 - 123.75	ESE	0.000	0.092	0.000	0.367	0.964	0.184	0.046	0.000	0.000	0.000	0.000	1.65
123.75 - 146.25	SE	0.000	0.138	0.092	0.046	0.367	0.229	0.321	0.046	0.000	0.000	0.000	1.24
146.25 - 168.75	SSE	0.000	0.000	0.046	0.046	0.184	0.413	0.184	0.138	0.046	0.000	0.000	1.06
168.75 - 191.25	S	0.000	0.184	0.046	0.229	0.413	0.459	0.321	0.138	0.000	0.000	0.000	1.79
191.25 - 213.75	SSW	0.000	0.000	0.000	0.138	0.551	1.101	0.780	0.046	0.000	0.000	0.000	2.62
213.75 - 236.25	SW	0.000	0.138	0.138	0.413	1.698	1.790	0.321	0.046	0.000	0.000	0.000	4.54
236.25 - 258.75	WSW	0.000	0.138	0.138	0.275	2.019	1.331	0.184	0.046	0.000	0.000	0.000	4.13
258.75 - 281.25	W	0.000	0.138	0.275	0.092	1.101	0.321	0.000	0.000	0.000	0.000	0.000	1.93
281.25 - 303.75	WNW	0.000	0.046	0.138	0.275	0.459	0.184	0.092	0.046	0.000	0.000	0.000	1.24
303.75 - 326.25	NW	0.000	0.092	0.092	0.367	1.101	0.688	0.046	0.000	0.000	0.000	0.000	2.39
326.25 - 348.75	NNW	0.000	0.046	0.092	0.367	0.734	0.688	0.229	0.138	0.046	0.000	0.000	2.34

Total 33.18

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	2	1	11	19	0	0	0	0	0	33
11.25 - 33.75	NNE	0	0	3	5	33	17	0	0	0	0	0	58
33.75 - 56.25	NE	0	1	4	3	13	3	0	0	0	0	0	24
56.25 - 78.75	ENE	0	1	4	7	2	0	0	0	0	0	0	14
78.75 - 101.25	E	0	1	4	5	1	0	0	0	0	0	0	11
101.25 - 123.75	ESE	0	0	2	2	3	0	0	0	0	0	0	7
123.75 - 146.25	SE	0	0	2	0	1	1	1	2	0	0	0	7
146.25 - 168.75	SSE	0	0	0	0	0	1	0	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	1	0	1	0	0	0	0	0	0	0	2
213.75 - 236.25	SW	0	0	1	1	5	0	0	0	0	0	0	7
236.25 - 258.75	WSW	1	0	0	1	2	2	1	0	0	0	0	7
258.75 - 281.25	W	0	0	2	0	1	1	0	0	0	0	0	4
281.25 - 303.75	WNW	0	0	0	1	0	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	0	0	14	0	0	0	0	0	0	0	5
326.25 - 348.75	NNW	0	1	1	2	5	4	0	0	0	0	0	13

Total 194

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.092	0.046	0.505	0.872	0.000	0.000	0.000	0.000	0.000	1.51
11.25 - 33.75	NNE	0.000	0.000	0.138	0.229	1.514	0.780	0.000	0.000	0.000	0.000	0.000	2.66
33.75 - 56.25	NE	0.000	0.046	0.184	0.138	0.597	0.138	0.000	0.000	0.000	0.000	0.000	1.10
56.25 - 78.75	ENE	0.000	0.046	0.184	0.321	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.64
78.75 - 101.25	E	0.000	0.046	0.184	0.229	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.50
101.25 - 123.75	ESE	0.000	0.000	0.092	0.092	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.32
123.75 - 146.25	SE	0.000	0.000	0.092	0.000	0.046	0.046	0.046	0.092	0.000	0.000	0.000	0.32
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.046	0.046	0.229	0.000	0.000	0.000	0.000	0.000	0.000	0.32
236.25 - 258.75	WSW	0.046	0.000	0.000	0.046	0.092	0.092	0.046	0.000	0.000	0.000	0.000	0.32
258.75 - 281.25	W	0.000	0.000	0.092	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.18
281.25 - 303.75	WNW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.000	0.046	0.184	0.000	0.000	0.000	0.000	0.000	0.000	0.23
326.25 - 348.75	NNW	0.000	0.046	0.046	0.092	0.229	0.184	0.000	0.000	0.000	0.000	0.000	0.60

Total 8.90

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	0	0	0	0	0	0	0	0
11.25 - 33.75	NNE	0	0	0	0	1	0	0	0	0	0	0	1
33.75 - 56.25	NE	0	0	1	0	2	0	0	0	0	0	0	3
56.25 - 78.75	ENE	0	0	1	1	0	0	0	0	0	0	0	2
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	0	0	0	0	0
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 6

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.046	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.14
56.25 - 78.75	ENE	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Total 0.28

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

**SALEM / HOPE CREEK
 JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	5	10	11	53	63	28	4	1	0	0	175
11.25 - 33.75	NNE	0	3	5	13	57	41	13	1	0	0	0	133
33.75 - 56.25	NE	0	4	10	9	44	30	17	1	0	0	0	115
56.25 - 78.75	ENE	0	6	19	17	21	6	1	0	0	0	0	70
78.75 - 101.25	E	0	8	12	11	9	3	0	0	0	0	0	43
101.25 - 123.75	ESE	0	4	2	12	29	6	1	0	0	0	0	54
123.75 - 146.25	SE	0	4	6	1	11	19	16	11	18	1	0	87
146.25 - 168.75	SSE	0	1	3	11	33	30	36	46	36	13	0	209
168.75 - 191.25	S	0	4	7	8	30	48	37	54	22	0	0	210
191.25 - 213.75	SSW	0	2	4	14	36	64	51	16	1	0	0	188
213.75 - 236.25	SW	0	4	8	21	72	99	46	8	0	0	0	258
236.25 - 258.75	WSW	1	3	7	17	76	65	22	7	0	0	0	198
258.75 - 281.25	W	0	3	11	4	44	23	7	1	0	0	0	93
281.25 - 303.75	WNW	0	2	7	10	22	14	3	1	0	0	0	59
303.75 - 326.25	NW	0	2	9	13	44	30	15	8	3	0	0	124
326.25 - 348.75	NNW	0	2	9	15	45	57	21	13	1	0	0	163

Total 2,179

MISSING HOURS: 29
 JOINT DATA RECOVERY: 98.7%

**SALEM / HOPE CREEK
 JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2013 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.229	0.459	0.505	2.432	2.891	1.285	0.184	0.046	0.000	0.000	8.03
11.25 - 33.75	NNE	0.000	0.138	0.229	0.597	2.616	1.882	0.597	0.046	0.000	0.000	0.000	6.10
33.75 - 56.25	NE	0.000	0.184	0.459	0.413	2.019	1.377	0.780	0.046	0.000	0.000	0.000	5.28
56.25 - 78.75	ENE	0.000	0.275	0.872	0.780	0.964	0.275	0.046	0.000	0.000	0.000	0.000	3.21
78.75 - 101.25	E	0.000	0.367	0.551	0.505	0.413	0.138	0.000	0.000	0.000	0.000	0.000	1.97
101.25 - 123.75	ESE	0.000	0.184	0.092	0.551	1.331	0.275	0.046	0.000	0.000	0.000	0.000	2.48
123.75 - 146.25	SE	0.000	0.184	0.275	0.046	0.505	0.872	0.734	0.505	0.826	0.046	0.000	3.99
146.25 - 168.75	SSE	0.000	0.046	0.138	0.505	1.514	1.377	1.652	2.111	1.652	0.597	0.000	9.59
168.75 - 191.25	S	0.000	0.184	0.321	0.367	1.377	2.203	1.698	2.478	1.010	0.000	0.000	9.64
191.25 - 213.75	SSW	0.000	0.092	0.184	0.642	1.652	2.937	2.341	0.734	0.046	0.000	0.000	8.63
213.75 - 236.25	SW	0.000	0.184	0.367	0.964	3.304	4.543	2.111	0.367	0.000	0.000	0.000	11.84
236.25 - 258.75	WSW	0.046	0.138	0.321	0.780	3.488	2.983	1.010	0.321	0.000	0.000	0.000	9.09
258.75 - 281.25	W	0.000	0.138	0.505	0.184	2.019	1.056	0.321	0.046	0.000	0.000	0.000	4.27
281.25 - 303.75	WNW	0.000	0.092	0.321	0.459	1.010	0.642	0.138	0.046	0.000	0.000	0.000	2.71
303.75 - 326.25	NW	0.000	0.092	0.413	0.597	2.019	1.377	0.688	0.367	0.138	0.000	0.000	5.69
326.25 - 348.75	NNW	0.000	0.092	0.413	0.688	2.065	2.616	0.964	0.597	0.046	0.000	0.000	7.48

Total 100.00

MISSING HOURS: 29
 JOINT DATA RECOVERY: 98.7%

Salem/Hope Creek Meteorological Tower
Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class
33 Ft. Wind Level
300 – 33 Ft. Delta Temperature
October – December 2013

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	0	2	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	0	0	0	0	0	0	0	0	0
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	1	0	1	0	0	2
146.25 - 168.75	SSE	0	0	0	0	0	0	1	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	1	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	0	0	1	1	1	0	0	3
236.25 - 258.75	WSW	0	0	0	0	0	1	3	1	0	0	0	5
258.75 - 281.25	W	0	0	0	0	0	0	2	0	0	0	0	2
281.25 - 303.75	WNW	0	0	0	0	0	0	0	1	1	0	0	2
303.75 - 326.25	NW	0	0	0	0	0	1	5	5	2	1	2	16
326.25 - 348.75	NNW	0	0	0	0	0	0	0	1	5	2	0	8

Total 42

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.09
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.137	0.046	0.000	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.09
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.09
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.046	0.228	0.228	0.091	0.046	0.091	0.73
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.228	0.091	0.000	0.36

Total 1.91

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	0	0	2	0	1	1	0	0	4
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	0	1	0	1	0	1	0	0	3
56.25 - 78.75	ENE	0	0	0	0	1	0	1	0	0	0	0	2
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	1	1	0	0	2
146.25 - 168.75	SSE	0	0	0	0	0	1	0	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	2	1	0	0	1	0	0	4
213.75 - 236.25	SW	0	0	0	0	2	2	1	0	0	0	0	5
236.25 - 258.75	WSW	0	0	0	0	2	6	1	1	0	0	0	10
258.75 - 281.25	W	0	0	0	0	0	2	1	0	1	0	0	4
281.25 - 303.75	WNNW	0	0	0	0	0	1	4	5	1	0	0	11
303.75 - 326.25	NW	0	0	0	0	1	4	3	4	2	0	0	14
326.25 - 348.75	NNW	0	0	0	0	0	1	0	2	1	0	0	4

Total 64

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.046	0.046	0.000	0.000	0.18
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.046	0.000	0.000	0.14
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.09
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.091	0.046	0.000	0.000	0.046	0.000	0.000	0.18
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.091	0.091	0.046	0.000	0.000	0.000	0.000	0.23
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.091	0.273	0.046	0.046	0.000	0.000	0.000	0.46
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.091	0.046	0.000	0.046	0.000	0.000	0.18
281.25 - 303.75	WNNW	0.000	0.000	0.000	0.000	0.000	0.046	0.182	0.228	0.046	0.000	0.000	0.50
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.182	0.137	0.182	0.091	0.000	0.000	0.64
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.091	0.046	0.000	0.000	0.18

Total 2.92

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	1	5	0	0	0	0	0	6
11.25 - 33.75	NNE	0	0	0	0	4	1	0	1	0	0	0	6
33.75 - 56.25	NE	0	0	0	1	1	1	0	3	4	0	0	10
56.25 - 78.75	ENE	0	0	0	0	2	1	0	2	0	0	0	5
78.75 - 101.25	E	0	0	0	1	0	0	1	0	0	0	0	2
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	2	0	2	0	0	0	4
146.25 - 168.75	SSE	0	0	0	0	2	1	1	0	1	0	0	5
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	1	0	1	0	0	0	0	2
213.75 - 236.25	SW	0	0	0	0	3	0	0	0	1	0	0	4
236.25 - 258.75	WSW	0	0	0	3	2	0	2	2	0	0	0	9
258.75 - 281.25	W	0	0	0	1	2	2	2	3	5	0	0	15
281.25 - 303.75	WNW	0	0	0	0	0	2	2	4	2	0	0	10
303.75 - 326.25	NW	0	0	0	0	5	4	8	2	3	1	0	23
326.25 - 348.75	NNW	0	0	0	0	1	0	2	4	1	1	0	9

Total 110

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.046	0.228	0.000	0.000	0.000	0.000	0.000	0.27
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.182	0.046	0.000	0.046	0.000	0.000	0.000	0.27
33.75 - 56.25	NE	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.137	0.182	0.000	0.000	0.46
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.091	0.046	0.000	0.091	0.000	0.000	0.000	0.23
78.75 - 101.25	E	0.000	0.000	0.000	0.046	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.09
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.091	0.000	0.000	0.000	0.18
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.091	0.046	0.046	0.000	0.046	0.000	0.000	0.23
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.137	0.000	0.000	0.000	0.046	0.000	0.000	0.18
236.25 - 258.75	WSW	0.000	0.000	0.000	0.137	0.091	0.000	0.091	0.091	0.000	0.000	0.000	0.41
258.75 - 281.25	W	0.000	0.000	0.000	0.046	0.091	0.091	0.091	0.137	0.228	0.000	0.000	0.68
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.091	0.091	0.182	0.091	0.000	0.000	0.46
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.228	0.182	0.365	0.091	0.137	0.046	0.000	1.05
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.046	0.000	0.091	0.182	0.046	0.046	0.000	0.41

Total 5.01

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	4	1	8	7	6	4	3	0	0	33
11.25 - 33.75	NNE	0	1	2	4	13	12	4	9	3	0	0	48
33.75 - 56.25	NE	0	1	2	4	6	13	9	30	27	0	0	92
56.25 - 78.75	ENE	0	1	4	4	3	3	2	1	5	0	0	23
78.75 - 101.25	E	0	1	6	5	1	0	1	0	0	0	0	14
101.25 - 123.75	ESE	0	2	2	9	7	0	0	0	0	1	0	21
123.75 - 146.25	SE	0	0	0	2	6	4	4	2	4	0	0	22
146.25 - 168.75	SSE	0	2	1	12	6	6	4	4	14	1	0	50
168.75 - 191.25	S	0	1	2	6	4	4	7	12	4	2	0	42
191.25 - 213.75	SSW	0	0	4	5	11	12	16	6	0	1	0	55
213.75 - 236.25	SW	0	0	2	10	6	8	3	3	1	0	0	33
236.25 - 258.75	WSW	0	0	0	4	8	18	4	2	1	0	0	37
258.75 - 281.25	W	0	0	3	3	10	19	18	3	4	0	0	60
281.25 - 303.75	WNNW	0	1	0	1	11	12	27	22	15	1	0	90
303.75 - 326.25	NW	0	1	4	6	3	9	14	21	33	7	0	98
326.25 - 348.75	NNW	0	0	1	4	3	9	9	27	13	0	0	66

Total 784

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.182	0.046	0.365	0.319	0.273	0.182	0.137	0.000	0.000	1.50
11.25 - 33.75	NNE	0.000	0.046	0.091	0.182	0.593	0.547	0.182	0.410	0.137	0.000	0.000	2.19
33.75 - 56.25	NE	0.000	0.046	0.091	0.182	0.273	0.593	0.410	1.367	1.231	0.000	0.000	4.19
56.25 - 78.75	ENE	0.000	0.046	0.182	0.182	0.137	0.137	0.091	0.046	0.228	0.000	0.000	1.05
78.75 - 101.25	E	0.000	0.046	0.273	0.228	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.64
101.25 - 123.75	ESE	0.000	0.091	0.091	0.410	0.319	0.000	0.000	0.000	0.000	0.046	0.000	0.96
123.75 - 146.25	SE	0.000	0.000	0.000	0.091	0.273	0.182	0.182	0.091	0.182	0.000	0.000	1.00
146.25 - 168.75	SSE	0.000	0.091	0.046	0.547	0.273	0.273	0.182	0.182	0.638	0.046	0.000	2.28
168.75 - 191.25	S	0.000	0.046	0.091	0.273	0.182	0.182	0.319	0.547	0.182	0.091	0.000	1.91
191.25 - 213.75	SSW	0.000	0.000	0.182	0.228	0.501	0.547	0.729	0.273	0.000	0.046	0.000	2.51
213.75 - 236.25	SW	0.000	0.000	0.091	0.456	0.273	0.365	0.137	0.137	0.046	0.000	0.000	1.50
236.25 - 258.75	WSW	0.000	0.000	0.000	0.182	0.365	0.820	0.182	0.091	0.046	0.000	0.000	1.69
258.75 - 281.25	W	0.000	0.000	0.137	0.137	0.456	0.866	0.820	0.137	0.182	0.000	0.000	2.73
281.25 - 303.75	WNNW	0.000	0.046	0.000	0.046	0.501	0.547	1.231	1.003	0.684	0.046	0.000	4.10
303.75 - 326.25	NW	0.000	0.046	0.182	0.273	0.137	0.410	0.638	0.957	1.504	0.319	0.000	4.47
326.25 - 348.75	NNW	0.000	0.000	0.046	0.182	0.137	0.410	0.410	1.231	0.593	0.000	0.000	3.01

Total 35.73

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	2	6	7	19	14	9	1	0	0	0	58
11.25 - 33.75	NNE	0	2	6	10	23	18	6	0	0	0	0	65
33.75 - 56.25	NE	0	3	5	2	7	16	2	4	0	0	0	39
56.25 - 78.75	ENE	0	5	7	5	5	3	1	0	0	0	0	26
78.75 - 101.25	E	0	11	7	1	3	1	1	0	0	0	0	24
101.25 - 123.75	ESE	0	1	3	3	7	2	0	1	0	1	0	18
123.75 - 146.25	SE	0	1	2	5	5	8	3	4	4	0	1	33
146.25 - 168.75	SSE	0	0	6	4	12	5	6	3	1	0	0	37
168.75 - 191.25	S	0	1	7	3	8	3	7	8	1	2	0	40
191.25 - 213.75	SSW	0	1	4	1	13	16	7	0	1	3	5	51
213.75 - 236.25	SW	0	3	3	5	15	16	2	0	0	1	0	45
236.25 - 258.75	WSW	0	2	4	5	28	27	6	1	1	0	0	74
258.75 - 281.25	W	0	3	2	6	11	23	12	2	0	0	0	59
281.25 - 303.75	WNW	0	1	4	8	14	24	16	5	0	0	0	72
303.75 - 326.25	NW	0	2	8	9	15	24	15	6	7	0	0	86
326.25 - 348.75	NNW	1	3	2	5	10	22	20	6	7	0	0	70

Total 797

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.091	0.273	0.319	0.866	0.638	0.410	0.046	0.000	0.000	0.000	2.64
11.25 - 33.75	NNE	0.000	0.091	0.273	0.456	1.048	0.820	0.273	0.000	0.000	0.000	0.000	2.96
33.75 - 56.25	NE	0.000	0.137	0.228	0.091	0.319	0.729	0.091	0.182	0.000	0.000	0.000	1.78
56.25 - 78.75	ENE	0.000	0.228	0.319	0.228	0.228	0.137	0.046	0.000	0.000	0.000	0.000	1.19
78.75 - 101.25	E	0.000	0.501	0.319	0.046	0.137	0.046	0.046	0.000	0.000	0.000	0.000	1.09
101.25 - 123.75	ESE	0.000	0.046	0.137	0.137	0.319	0.091	0.000	0.046	0.000	0.046	0.000	0.82
123.75 - 146.25	SE	0.000	0.046	0.091	0.228	0.228	0.365	0.137	0.182	0.182	0.000	0.046	1.50
146.25 - 168.75	SSE	0.000	0.000	0.273	0.182	0.547	0.228	0.273	0.137	0.046	0.000	0.000	1.69
168.75 - 191.25	S	0.000	0.046	0.319	0.137	0.365	0.137	0.319	0.365	0.046	0.091	0.000	1.82
191.25 - 213.75	SSW	0.000	0.046	0.182	0.046	0.593	0.729	0.319	0.000	0.046	0.137	0.228	2.32
213.75 - 236.25	SW	0.000	0.137	0.137	0.228	0.684	0.729	0.091	0.000	0.000	0.046	0.000	2.05
236.25 - 258.75	WSW	0.000	0.091	0.182	0.228	1.276	1.231	0.273	0.046	0.046	0.000	0.000	3.37
258.75 - 281.25	W	0.000	0.137	0.091	0.273	0.501	1.048	0.547	0.091	0.000	0.000	0.000	2.69
281.25 - 303.75	WNW	0.000	0.046	0.182	0.365	0.638	1.094	0.729	0.228	0.000	0.000	0.000	3.28
303.75 - 326.25	NW	0.000	0.091	0.365	0.410	0.684	1.094	0.684	0.273	0.319	0.000	0.000	3.92
326.25 - 348.75	NNW	0.046	0.137	0.091	0.228	0.456	1.003	0.912	0.273	0.046	0.000	0.000	3.19

Total 36.33

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	1	0	6	5	1	0	0	0	0	0	13
11.25 - 33.75	NNE	0	5	1	5	10	5	0	0	0	0	0	26
33.75 - 56.25	NE	0	4	2	8	5	1	0	0	0	0	0	20
56.25 - 78.75	ENE	0	5	5	4	4	0	0	0	0	0	0	18
78.75 - 101.25	E	1	6	14	5	0	0	0	0	0	0	0	26
101.25 - 123.75	ESE	0	5	2	6	2	0	0	0	0	0	0	15
123.75 - 146.25	SE	0	1	2	5	8	8	8	1	0	0	1	34
146.25 - 168.75	SSE	0	1	1	6	20	5	1	3	0	0	1	38
168.75 - 191.25	S	0	1	2	2	9	3	2	0	3	0	0	22
191.25 - 213.75	SSW	0	0	1	2	4	8	5	5	6	0	0	31
213.75 - 236.25	SW	0	2	1	0	14	9	0	0	1	0	0	27
236.25 - 258.75	WSW	0	0	2	1	10	1	0	0	0	0	0	14
258.75 - 281.25	W	0	1	2	1	3	1	0	0	0	0	0	8
281.25 - 303.75	WNW	0	0	0	1	2	0	0	0	0	0	0	3
303.75 - 326.25	NW	0	1	3	3	0	0	0	0	0	0	0	7
326.25 - 348.75	NNW	0	1	2	2	3	0	1	0	0	0	0	9

Total 311

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.046	0.000	0.273	0.228	0.046	0.000	0.000	0.000	0.000	0.000	0.59
11.25 - 33.75	NNE	0.000	0.228	0.046	0.228	0.456	0.228	0.000	0.000	0.000	0.000	0.000	1.19
33.75 - 56.25	NE	0.000	0.182	0.091	0.365	0.228	0.046	0.000	0.000	0.000	0.000	0.000	0.91
56.25 - 78.75	ENE	0.000	0.228	0.228	0.182	0.182	0.000	0.000	0.000	0.000	0.000	0.000	0.82
78.75 - 101.25	E	0.046	0.273	0.638	0.228	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.19
101.25 - 123.75	ESE	0.000	0.228	0.091	0.273	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.68
123.75 - 146.25	SE	0.000	0.046	0.091	0.228	0.365	0.365	0.365	0.046	0.000	0.000	0.046	1.55
146.25 - 168.75	SSE	0.000	0.046	0.046	0.273	0.912	0.228	0.046	0.137	0.000	0.000	0.046	1.73
168.75 - 191.25	S	0.000	0.046	0.091	0.091	0.410	0.137	0.091	0.000	0.137	0.000	0.000	1.00
191.25 - 213.75	SSW	0.000	0.000	0.046	0.091	0.182	0.365	0.228	0.228	0.273	0.000	0.000	1.41
213.75 - 236.25	SW	0.000	0.091	0.046	0.000	0.638	0.410	0.000	0.000	0.046	0.000	0.000	1.23
236.25 - 258.75	WSW	0.000	0.000	0.091	0.046	0.456	0.046	0.000	0.000	0.000	0.000	0.000	0.64
258.75 - 281.25	W	0.000	0.046	0.091	0.046	0.137	0.046	0.000	0.000	0.000	0.000	0.000	0.36
281.25 - 303.75	WNW	0.000	0.000	0.000	0.046	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.14
303.75 - 326.25	NW	0.000	0.046	0.137	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.32
326.25 - 348.75	NNW	0.000	0.046	0.091	0.091	0.137	0.000	0.046	0.000	0.000	0.000	0.000	0.41

Total 14.18

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	1	1	0	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	2	3	4	0	0	0	0	0	9
33.75 - 56.25	NE	0	0	0	5	2	5	0	0	0	0	0	12
56.25 - 78.75	ENE	0	0	1	1	1	0	0	0	0	0	0	3
78.75 - 101.25	E	0	2	1	1	1	0	0	0	0	0	0	5
101.25 - 123.75	ESE	0	1	0	1	1	2	0	0	0	0	0	5
123.75 - 146.25	SE	0	0	2	1	11	5	10	4	2	0	0	35
146.25 - 168.75	SSE	0	0	0	0	2	2	0	3	0	0	0	7
168.75 - 191.25	S	0	0	0	0	0	2	3	1	1	0	0	7
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	1	0	0	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 86

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2013 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.091	0.137	0.182	0.000	0.000	0.000	0.000	0.000	0.41
33.75 - 56.25	NE	0.000	0.000	0.000	0.228	0.091	0.228	0.000	0.000	0.000	0.000	0.000	0.55
56.25 - 78.75	ENE	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.14
78.75 - 101.25	E	0.000	0.091	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.23
101.25 - 123.75	ESE	0.000	0.046	0.000	0.046	0.046	0.091	0.000	0.000	0.000	0.000	0.000	0.23
123.75 - 146.25	SE	0.000	0.000	0.091	0.046	0.501	0.228	0.456	0.182	0.091	0.000	0.000	1.60
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.091	0.091	0.000	0.137	0.000	0.000	0.000	0.32
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.091	0.137	0.046	0.046	0.000	0.000	0.32
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Total 3.92

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2013 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	3	10	15	34	29	15	8	4	0	0	118
11.25 - 33.75	NNE	0	8	9	21	53	40	10	10	3	0	0	154
33.75 - 56.25	NE	0	8	9	20	22	36	12	37	32	0	0	176
56.25 - 78.75	ENE	0	11	17	14	16	7	4	3	5	0	0	77
78.75 - 101.25	E	1	20	28	13	5	1	3	0	0	0	0	71
101.25 - 123.75	ESE	0	9	7	19	17	4	0	1	0	2	0	59
123.75 - 146.25	SE	0	2	6	13	30	27	26	14	12	0	2	132
146.25 - 168.75	SSE	0	3	8	22	42	20	13	13	16	1	1	139
168.75 - 191.25	S	0	3	11	11	21	12	19	21	9	4	0	111
191.25 - 213.75	SSW	0	1	9	8	31	37	30	11	8	4	5	144
213.75 - 236.25	SW	0	5	6	15	41	35	7	4	4	1	0	118
236.25 - 258.75	WSW	0	2	6	13	50	53	16	7	2	0	0	149
258.75 - 281.25	W	0	4	7	11	26	47	35	8	10	0	0	148
281.25 - 303.75	WNW	0	2	4	10	27	39	49	37	19	1	0	188
303.75 - 326.25	NW	0	4	15	18	24	42	45	38	47	9	2	244
326.25 - 348.75	NNW	1	4	5	11	17	32	32	40	21	3	0	166

Total 2,194

MISSING HOURS: 14
JOINT DATA RECOVERY: 99.4%

**SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2013 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)**

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.137	0.456	0.684	1.550	1.322	0.684	0.365	0.182	0.000	0.000	5.38
11.25 - 33.75	NNE	0.000	0.365	0.410	0.957	2.416	1.823	0.456	0.456	0.137	0.000	0.000	7.02
33.75 - 56.25	NE	0.000	0.365	0.410	0.912	1.003	1.641	0.547	1.686	1.459	0.000	0.000	8.02
56.25 - 78.75	ENE	0.000	0.501	0.775	0.638	0.729	0.319	0.182	0.137	0.228	0.000	0.000	3.51
78.75 - 101.25	E	0.046	0.912	1.276	0.593	0.228	0.046	0.137	0.000	0.000	0.000	0.000	3.24
101.25 - 123.75	ESE	0.000	0.410	0.319	0.866	0.775	0.182	0.000	0.046	0.000	0.091	0.000	2.69
123.75 - 146.25	SE	0.000	0.091	0.273	0.593	1.367	1.231	1.185	0.638	0.547	0.000	0.091	6.02
146.25 - 168.75	SSE	0.000	0.137	0.365	1.003	1.914	0.912	0.593	0.593	0.729	0.046	0.046	6.34
168.75 - 191.25	S	0.000	0.137	0.501	0.501	0.957	0.547	0.866	0.957	0.410	0.182	0.000	5.06
191.25 - 213.75	SSW	0.000	0.046	0.410	0.365	1.413	1.686	1.367	0.501	0.365	0.182	0.228	6.56
213.75 - 236.25	SW	0.000	0.228	0.273	0.684	1.869	1.595	0.319	0.182	0.182	0.046	0.000	5.38
236.25 - 258.75	WSW	0.000	0.091	0.273	0.593	2.279	2.416	0.729	0.319	0.091	0.000	0.000	6.79
258.75 - 281.25	W	0.000	0.182	0.319	0.501	1.185	2.142	1.595	0.365	0.456	0.000	0.000	6.75
281.25 - 303.75	WNW	0.000	0.091	0.182	0.456	1.231	1.778	2.233	1.686	0.866	0.046	0.000	8.57
303.75 - 326.25	NW	0.000	0.182	0.684	0.820	1.094	1.914	2.051	1.732	2.142	0.410	0.091	11.12
326.25 - 348.75	NNW	0.046	0.182	0.228	0.501	0.775	1.459	1.459	1.823	0.957	0.137	0.000	7.57

Total 100.00

MISSING HOURS: 14
JOINT DATA RECOVERY: 99.4%

Salem/Hope Creek Meteorological Tower
Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature

January – December 2013

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	1	0	5	0	6	0	1	0	13
11.25 - 33.75	NNE	0	0	0	0	2	1	2	3	1	0	0	9
33.75 - 56.25	NE	0	0	0	0	1	1	5	2	0	0	0	9
56.25 - 78.75	ENE	0	0	0	0	1	7	6	2	0	0	0	16
78.75 - 101.25	E	0	0	0	0	0	6	5	1	0	0	0	12
101.25 - 123.75	ESE	0	0	0	0	0	4	6	0	0	0	0	10
123.75 - 146.25	SE	0	0	0	0	0	2	5	4	8	0	0	19
146.25 - 168.75	SSE	0	0	0	1	2	4	3	2	2	0	0	14
168.75 - 191.25	S	0	0	0	0	0	2	1	0	0	0	0	3
191.25 - 213.75	SSW	0	0	0	0	0	0	1	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	3	2	1	1	1	0	0	8
236.25 - 258.75	WSW	0	0	0	0	0	6	3	4	2	0	0	15
258.75 - 281.25	W	0	0	0	0	0	4	11	4	1	0	0	24
281.25 - 303.75	WNV	0	0	0	0	1	3	6	12	27	1	0	50
303.75 - 326.25	NW	0	0	0	0	1	5	9	17	26	10	2	70
326.25 - 348.75	NNW	0	0	0	0	0	7	7	8	10	4	2	38

Total 311

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)	Sect.	< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.012	0.000	0.058	0.000	0.070	0.000	0.012	0.000	0.15
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.023	0.012	0.023	0.035	0.012	0.000	0.000	0.10
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.012	0.012	0.058	0.023	0.000	0.000	0.000	0.10
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.012	0.082	0.070	0.023	0.000	0.000	0.000	0.19
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.070	0.058	0.012	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.047	0.070	0.000	0.000	0.000	0.000	0.12
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.023	0.058	0.047	0.093	0.000	0.000	0.22
146.25 - 168.75	SSE	0.000	0.000	0.000	0.012	0.023	0.047	0.035	0.023	0.023	0.000	0.000	0.16
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.023	0.012	0.000	0.000	0.000	0.000	0.03
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.01
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.035	0.023	0.012	0.012	0.012	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.070	0.035	0.047	0.023	0.000	0.000	0.17
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.047	0.128	0.047	0.058	0.000	0.000	0.28
281.25 - 303.75	WNV	0.000	0.000	0.000	0.000	0.012	0.035	0.070	0.140	0.315	0.012	0.000	0.58
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.012	0.058	0.105	0.198	0.303	0.117	0.023	0.82
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.082	0.082	0.093	0.117	0.047	0.023	0.44

Total 3.63

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	0	0	2	1	6	3	4	3	0	0	19
11.25 - 33.75	NNE	0	0	0	0	0	2	4	2	2	0	0	10
33.75 - 56.25	NE	0	0	0	0	4	2	3	0	1	0	0	10
56.25 - 78.75	ENE	0	0	0	0	7	2	3	0	0	0	0	12
78.75 - 101.25	E	0	0	0	0	2	2	3	1	0	0	0	8
101.25 - 123.75	ESE	0	0	0	0	0	1	1	0	0	0	0	2
123.75 - 146.25	SE	0	0	0	0	2	2	1	3	12	0	0	20
146.25 - 168.75	SSE	0	0	0	0	9	8	2	2	5	0	0	26
168.75 - 191.25	S	0	0	0	0	2	0	1	2	0	0	0	5
191.25 - 213.75	SSW	0	0	0	0	6	3	0	0	1	0	0	10
213.75 - 236.25	SW	0	0	0	0	8	4	1	1	0	0	0	14
236.25 - 258.75	WSW	0	0	0	0	4	11	5	3	2	0	0	25
258.75 - 281.25	W	0	0	0	0	5	6	5	2	3	2	1	24
281.25 - 303.75	WNW	0	0	0	0	3	4	5	12	10	0	0	34
303.75 - 326.25	NW	0	0	0	0	5	9	12	17	19	6	0	68
326.25 - 348.75	NNW	0	0	0	0	0	9	7	10	12	4	0	42

Total 329

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.000	0.000	0.023	0.012	0.070	0.035	0.047	0.035	0.000	0.000	0.22
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.023	0.047	0.023	0.023	0.000	0.000	0.12
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.047	0.023	0.035	0.000	0.012	0.000	0.000	0.12
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.082	0.023	0.035	0.000	0.000	0.000	0.000	0.14
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.023	0.023	0.035	0.012	0.000	0.000	0.000	0.09
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.012	0.012	0.000	0.000	0.000	0.000	0.02
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.023	0.023	0.012	0.035	0.140	0.000	0.000	0.23
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.105	0.093	0.023	0.023	0.058	0.000	0.000	0.30
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.023	0.000	0.012	0.023	0.000	0.000	0.000	0.06
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.070	0.035	0.000	0.000	0.012	0.000	0.000	0.12
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.093	0.047	0.012	0.012	0.000	0.000	0.000	0.16
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.047	0.128	0.058	0.035	0.023	0.000	0.000	0.29
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.058	0.070	0.058	0.023	0.035	0.023	0.012	0.28
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.035	0.047	0.058	0.140	0.117	0.000	0.000	0.40
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.058	0.105	0.140	0.198	0.222	0.070	0.000	0.79
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.105	0.082	0.117	0.140	0.047	0.000	0.49

Total 3.84

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	9	15	6	7	4	1	0	42
11.25 - 33.75	NNE	0	0	1	0	6	4	5	4	0	0	0	20
33.75 - 56.25	NE	0	0	1	1	5	9	9	5	4	0	0	34
56.25 - 78.75	ENE	0	0	0	0	6	4	2	2	0	0	0	14
78.75 - 101.25	E	0	0	0	2	4	4	2	0	0	0	0	12
101.25 - 123.75	ESE	0	0	0	2	2	0	2	1	0	0	0	7
123.75 - 146.25	SE	0	0	0	0	2	8	2	6	3	2	0	23
146.25 - 168.75	SSE	0	0	0	4	7	4	7	5	5	2	0	34
168.75 - 191.25	S	0	0	0	2	9	2	2	3	1	0	0	19
191.25 - 213.75	SSW	0	0	0	1	5	6	1	1	0	0	0	14
213.75 - 236.25	SW	0	0	0	1	13	6	1	1	1	0	0	23
236.25 - 258.75	WSW	0	0	0	3	8	7	3	4	3	0	0	28
258.75 - 281.25	W	0	0	0	1	6	7	3	6	7	1	0	31
281.25 - 303.75	WNW	0	0	0	1	4	7	4	11	7	2	0	36
303.75 - 326.25	NW	0	0	1	2	14	11	23	13	13	7	0	84
326.25 - 348.75	NNW	0	0	2	1	11	17	14	18	5	6	0	74

Total 495

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.105	0.175	0.070	0.082	0.047	0.012	0.000	0.49
11.25 - 33.75	NNE	0.000	0.000	0.012	0.000	0.070	0.047	0.058	0.047	0.000	0.000	0.000	0.23
33.75 - 56.25	NE	0.000	0.000	0.012	0.012	0.058	0.105	0.105	0.058	0.047	0.000	0.000	0.40
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.070	0.047	0.023	0.023	0.000	0.000	0.000	0.16
78.75 - 101.25	E	0.000	0.000	0.000	0.023	0.047	0.047	0.023	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.023	0.023	0.000	0.023	0.012	0.000	0.000	0.000	0.08
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.023	0.093	0.023	0.070	0.035	0.023	0.000	0.27
146.25 - 168.75	SSE	0.000	0.000	0.000	0.047	0.082	0.047	0.082	0.058	0.058	0.023	0.000	0.40
168.75 - 191.25	S	0.000	0.000	0.000	0.023	0.105	0.023	0.023	0.035	0.012	0.000	0.000	0.22
191.25 - 213.75	SSW	0.000	0.000	0.000	0.012	0.058	0.070	0.012	0.012	0.000	0.000	0.000	0.16
213.75 - 236.25	SW	0.000	0.000	0.000	0.012	0.152	0.070	0.012	0.012	0.012	0.000	0.000	0.27
236.25 - 258.75	WSW	0.000	0.000	0.000	0.035	0.093	0.082	0.035	0.047	0.035	0.000	0.000	0.33
258.75 - 281.25	W	0.000	0.000	0.000	0.012	0.070	0.082	0.035	0.070	0.082	0.012	0.000	0.36
281.25 - 303.75	WNW	0.000	0.000	0.000	0.012	0.047	0.082	0.047	0.128	0.082	0.023	0.000	0.42
303.75 - 326.25	NW	0.000	0.000	0.012	0.023	0.163	0.128	0.268	0.152	0.152	0.082	0.000	0.98
326.25 - 348.75	NNW	0.000	0.000	0.023	0.012	0.128	0.198	0.163	0.210	0.058	0.070	0.000	0.86

Total 5.77

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0	2	10	7	37	40	42	29	26	9	2	204
11.25 - 33.75	NNE	0	2	4	12	44	49	31	17	6	2	4	171
33.75 - 56.25	NE	0	2	7	9	36	55	31	36	28	2	3	209
56.25 - 78.75	ENE	0	3	9	15	33	27	14	7	10	0	0	118
78.75 - 101.25	E	0	3	11	12	22	19	7	2	0	0	0	76
101.25 - 123.75	ESE	0	5	5	11	21	16	6	5	1	1	0	71
123.75 - 146.25	SE	0	1	4	5	18	29	50	45	63	8	0	223
146.25 - 168.75	SSE	0	3	4	18	35	35	39	67	81	15	0	297
168.75 - 191.25	S	0	1	9	17	41	55	56	79	46	3	0	307
191.25 - 213.75	SSW	0	2	8	19	52	64	64	31	1	1	0	242
213.75 - 236.25	SW	0	1	11	29	48	81	56	19	3	0	0	248
236.25 - 258.75	WSW	0	0	8	21	64	79	43	16	3	0	0	234
258.75 - 281.25	W	0	0	7	10	42	50	36	17	16	2	0	180
281.25 - 303.75	WNW	0	2	7	7	33	40	50	64	55	8	2	268
303.75 - 326.25	NW	0	3	10	10	25	53	69	78	111	39	3	401
326.25 - 348.75	NNW	0	1	6	13	32	49	41	61	42	12	0	257

Total 3,506

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION (Degrees)		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
348.75 - 11.25	N	0.000	0.023	0.117	0.082	0.432	0.467	0.490	0.338	0.303	0.105	0.023	2.38
11.25 - 33.75	NNE	0.000	0.023	0.047	0.140	0.513	0.572	0.362	0.198	0.070	0.023	0.047	1.99
33.75 - 56.25	NE	0.000	0.023	0.082	0.105	0.420	0.642	0.362	0.420	0.327	0.023	0.035	2.44
56.25 - 78.75	ENE	0.000	0.035	0.105	0.175	0.385	0.315	0.163	0.082	0.117	0.000	0.000	1.38
78.75 - 101.25	E	0.000	0.035	0.128	0.140	0.257	0.222	0.082	0.023	0.000	0.000	0.000	0.89
101.25 - 123.75	ESE	0.000	0.058	0.058	0.128	0.245	0.187	0.070	0.058	0.012	0.012	0.000	0.83
123.75 - 146.25	SE	0.000	0.012	0.047	0.058	0.210	0.338	0.583	0.525	0.735	0.093	0.000	2.60
146.25 - 168.75	SSE	0.000	0.035	0.047	0.210	0.408	0.408	0.455	0.782	0.945	0.175	0.000	3.46
168.75 - 191.25	S	0.000	0.012	0.105	0.198	0.478	0.642	0.653	0.922	0.537	0.035	0.000	3.58
191.25 - 213.75	SSW	0.000	0.023	0.093	0.222	0.607	0.747	0.747	0.362	0.012	0.012	0.000	2.82
213.75 - 236.25	SW	0.000	0.012	0.128	0.338	0.560	0.945	0.653	0.222	0.035	0.000	0.000	2.89
236.25 - 258.75	WSW	0.000	0.000	0.093	0.245	0.747	0.922	0.502	0.187	0.035	0.000	0.000	2.73
258.75 - 281.25	W	0.000	0.000	0.082	0.117	0.490	0.583	0.420	0.198	0.187	0.023	0.000	2.10
281.25 - 303.75	WNW	0.000	0.023	0.082	0.082	0.385	0.467	0.583	0.747	0.642	0.093	0.023	3.13
303.75 - 326.25	NW	0.000	0.035	0.117	0.117	0.292	0.618	0.805	0.910	1.295	0.455	0.035	4.68
326.25 - 348.75	NNW	0.000	0.012	0.070	0.152	0.373	0.572	0.478	0.712	0.490	0.140	0.000	3.00

Total 40.90

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	7	10	17	49	45	36	15	12	3	0	194
11.25 - 33.75	NNE	0	6	12	18	54	55	16	2	1	0	1	165
33.75 - 56.25	NE	0	7	10	13	41	33	5	4	0	0	0	113
56.25 - 78.75	ENE	0	12	29	26	22	7	3	0	0	0	0	99
78.75 - 101.25	E	0	20	23	14	22	2	1	0	0	0	0	82
101.25 - 123.75	ESE	0	4	10	18	53	20	4	1	0	1	0	111
123.75 - 146.25	SE	0	4	7	10	29	34	23	21	24	3	1	156
146.25 - 168.75	SSE	0	1	9	10	38	28	18	18	3	0	0	125
168.75 - 191.25	S	0	7	13	12	35	24	25	27	6	4	0	153
191.25 - 213.75	SSW	0	2	5	13	48	52	34	8	7	4	5	178
213.75 - 236.25	SW	0	8	14	22	96	75	26	6	2	1	0	250
236.25 - 258.75	WSW	0	6	17	18	100	70	18	4	3	1	0	237
258.75 - 281.25	W	0	7	16	13	63	54	23	7	0	0	2	185
281.25 - 303.75	WNW	0	5	10	22	57	63	41	9	2	0	0	209
303.75 - 326.25	NW	0	4	16	22	66	87	62	31	18	0	0	306
326.25 - 348.75	NNW	1	4	6	19	47	94	59	31	25	0	0	286

Total 2,849

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.082	0.117	0.198	0.572	0.525	0.420	0.175	0.140	0.035	0.000	2.26
11.25 - 33.75	NNE	0.000	0.070	0.140	0.210	0.630	0.642	0.187	0.023	0.012	0.000	0.012	1.92
33.75 - 56.25	NE	0.000	0.082	0.117	0.152	0.478	0.385	0.058	0.047	0.000	0.000	0.000	1.32
56.25 - 78.75	ENE	0.000	0.140	0.338	0.303	0.257	0.082	0.035	0.000	0.000	0.000	0.000	1.15
78.75 - 101.25	E	0.000	0.233	0.268	0.163	0.257	0.023	0.012	0.000	0.000	0.000	0.000	0.96
101.25 - 123.75	ESE	0.000	0.047	0.117	0.210	0.618	0.233	0.047	0.012	0.000	0.012	0.000	1.29
123.75 - 146.25	SE	0.000	0.047	0.082	0.117	0.338	0.397	0.268	0.245	0.280	0.035	0.012	1.82
146.25 - 168.75	SSE	0.000	0.012	0.105	0.117	0.443	0.327	0.210	0.210	0.035	0.000	0.000	1.46
168.75 - 191.25	S	0.000	0.082	0.152	0.140	0.408	0.280	0.292	0.315	0.070	0.047	0.000	1.78
191.25 - 213.75	SSW	0.000	0.023	0.058	0.152	0.560	0.607	0.397	0.093	0.082	0.047	0.058	2.08
213.75 - 236.25	SW	0.000	0.093	0.163	0.257	1.120	0.875	0.303	0.070	0.023	0.012	0.000	2.92
236.25 - 258.75	WSW	0.000	0.070	0.198	0.210	1.167	0.817	0.210	0.047	0.035	0.012	0.000	2.76
258.75 - 281.25	W	0.000	0.082	0.187	0.152	0.735	0.630	0.268	0.082	0.000	0.000	0.023	2.16
281.25 - 303.75	WNW	0.000	0.058	0.117	0.257	0.665	0.735	0.478	0.105	0.023	0.000	0.000	2.44
303.75 - 326.25	NW	0.000	0.047	0.187	0.257	0.770	1.015	0.723	0.362	0.210	0.000	0.000	3.57
326.25 - 348.75	NNW	0.012	0.047	0.070	0.222	0.548	1.097	0.688	0.362	0.292	0.000	0.000	3.34

Total 33.24

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	2	10	25	25	1	0	0	0	0	65
11.25 - 33.75	NNE	0	7	4	13	52	27	2	0	0	0	0	105
33.75 - 56.25	NE	0	6	8	16	28	6	1	0	0	0	0	65
56.25 - 78.75	ENE	0	6	10	12	10	1	0	0	0	0	0	39
78.75 - 101.25	E	1	7	23	18	1	0	0	0	0	0	0	50
101.25 - 123.75	ESE	0	6	9	10	14	3	0	0	0	0	0	42
123.75 - 146.25	SE	0	2	6	9	20	24	21	18	13	2	1	116
146.25 - 168.75	SSE	0	2	2	12	32	15	6	3	1	1	1	75
168.75 - 191.25	S	0	1	6	4	14	10	4	1	4	5	4	53
191.25 - 213.75	SSW	0	1	3	5	8	11	7	5	8	2	0	50
213.75 - 236.25	SW	0	2	4	8	31	14	3	0	2	0	0	64
236.25 - 258.75	WSW	1	2	7	7	25	8	3	0	0	0	0	53
258.75 - 281.25	W	0	1	4	4	6	6	1	1	0	0	0	23
281.25 - 303.75	WNW	0	0	1	4	4	0	0	0	0	0	0	9
303.75 - 326.25	NW	0	1	5	8	13	1	1	0	0	0	0	29
326.25 - 348.75	NNW	0	2	4	5	20	8	2	0	0	0	0	41

Total 879

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.023	0.023	0.117	0.292	0.292	0.012	0.000	0.000	0.000	0.000	0.76
11.25 - 33.75	NNE	0.000	0.082	0.047	0.152	0.607	0.315	0.023	0.000	0.000	0.000	0.000	1.22
33.75 - 56.25	NE	0.000	0.070	0.093	0.187	0.327	0.070	0.012	0.000	0.000	0.000	0.000	0.76
56.25 - 78.75	ENE	0.000	0.070	0.117	0.140	0.117	0.012	0.000	0.000	0.000	0.000	0.000	0.45
78.75 - 101.25	E	0.012	0.082	0.268	0.210	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.58
101.25 - 123.75	ESE	0.000	0.070	0.105	0.117	0.163	0.035	0.000	0.000	0.000	0.000	0.000	0.49
123.75 - 146.25	SE	0.000	0.023	0.070	0.105	0.233	0.280	0.245	0.210	0.152	0.023	0.012	1.35
146.25 - 168.75	SSE	0.000	0.023	0.023	0.140	0.373	0.175	0.070	0.035	0.012	0.012	0.012	0.87
168.75 - 191.25	S	0.000	0.012	0.070	0.047	0.163	0.117	0.047	0.012	0.047	0.058	0.047	0.62
191.25 - 213.75	SSW	0.000	0.012	0.035	0.058	0.093	0.128	0.082	0.058	0.093	0.023	0.000	0.58
213.75 - 236.25	SW	0.000	0.023	0.047	0.093	0.362	0.163	0.035	0.000	0.023	0.000	0.000	0.75
236.25 - 258.75	WSW	0.012	0.023	0.082	0.082	0.292	0.093	0.035	0.000	0.000	0.000	0.000	0.62
258.75 - 281.25	W	0.000	0.012	0.047	0.047	0.070	0.070	0.012	0.012	0.000	0.000	0.000	0.27
281.25 - 303.75	WNW	0.000	0.000	0.012	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.10
303.75 - 326.25	NW	0.000	0.012	0.058	0.093	0.152	0.012	0.012	0.000	0.000	0.000	0.000	0.34
326.25 - 348.75	NNW	0.000	0.023	0.047	0.058	0.233	0.093	0.023	0.000	0.000	0.000	0.000	0.48

Total 10.25

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	1	1	1	3	0	0	0	0	0	0	6
11.25 - 33.75	NNE	0	0	0	2	4	5	0	0	0	0	0	11
33.75 - 56.25	NE	0	0	1	6	10	6	0	0	0	0	0	23
56.25 - 78.75	ENE	0	0	3	4	3	0	0	0	0	0	0	10
78.75 - 101.25	E	0	2	2	3	2	0	0	0	0	0	0	9
101.25 - 123.75	ESE	0	1	1	3	4	4	0	0	0	0	0	13
123.75 - 146.25	SE	0	0	2	4	14	17	25	10	13	0	0	85
146.25 - 168.75	SSE	0	0	0	0	5	5	3	6	3	1	0	23
168.75 - 191.25	S	0	0	0	0	0	2	6	1	2	0	0	11
191.25 - 213.75	SSW	0	0	1	0	1	1	2	3	0	1	0	9
213.75 - 236.25	SW	0	0	0	0	1	0	0	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	2	0	0	0	0	0	0	0	0	0	2

Total 203

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.012	0.012	0.012	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.07
11.25 - 33.75	NNE	0.000	0.000	0.000	0.023	0.047	0.058	0.000	0.000	0.000	0.000	0.000	0.13
33.75 - 56.25	NE	0.000	0.000	0.012	0.070	0.117	0.070	0.000	0.000	0.000	0.000	0.000	0.27
56.25 - 78.75	ENE	0.000	0.000	0.035	0.047	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.12
78.75 - 101.25	E	0.000	0.023	0.023	0.035	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.10
101.25 - 123.75	ESE	0.000	0.012	0.012	0.035	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.15
123.75 - 146.25	SE	0.000	0.000	0.023	0.047	0.163	0.198	0.292	0.117	0.152	0.000	0.000	0.99
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.058	0.058	0.035	0.070	0.035	0.012	0.000	0.27
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.023	0.070	0.012	0.023	0.000	0.000	0.13
191.25 - 213.75	SSW	0.000	0.000	0.012	0.000	0.012	0.012	0.023	0.035	0.000	0.012	0.000	0.10
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.01
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.02

Total 2.37

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0	12	23	38	124	136	88	61	45	14	2	543
11.25 - 33.75	NNE	0	15	21	45	162	143	60	28	10	2	5	491
33.75 - 56.25	NE	0	15	27	45	125	112	54	47	33	2	3	463
56.25 - 78.75	ENE	0	21	51	57	82	48	28	11	10	0	0	308
78.75 - 101.25	E	1	32	59	49	53	33	18	4	0	0	0	249
101.25 - 123.75	ESE	0	16	25	44	94	48	19	7	1	2	0	256
123.75 - 146.25	SE	0	7	19	28	85	116	127	107	136	15	2	642
146.25 - 168.75	SSE	0	6	15	45	128	99	78	103	100	19	1	594
168.75 - 191.25	S	0	9	28	35	101	95	95	113	59	12	4	551
191.25 - 213.75	SSW	0	5	17	38	120	137	109	48	17	8	5	504
213.75 - 236.25	SW	0	11	29	60	200	182	88	28	9	1	0	608
236.25 - 258.75	WSW		18	32	49	201	181	75	31	13	1	0	592
258.75 - 281.25	W	0	8	27	28	122	127	79	37	31	5	3	467
281.25 - 303.75	WNW	0	7	18	34	102	117	106	108	101	11	2	606
303.75 - 326.25	NW	0	8	32	42	124	166	176	156	187	62	5	958
326.25 - 348.75	NNW	1	9	18	38	110	184	130	128	94	26	2	740

Total 8,572

MISSING HOURS: 188
 JOINT DATA RECOVERY: 97.9%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2013
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND SPEED GROUPS (m/sec)

WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.140	0.268	0.443	1.447	1.587	1.027	0.712	0.525	0.163	0.023	6.33
11.25 - 33.75	NNE	0.000	0.175	0.245	0.525	1.890	1.668	0.700	0.327	0.117	0.023	0.058	5.73
33.75 - 56.25	NE	0.000	0.175	0.315	0.525	1.458	1.307	0.630	0.548	0.385	0.023	0.035	5.40
56.25 - 78.75	ENE	0.000	0.245	0.595	0.665	0.957	0.560	0.327	0.128	0.117	0.000	0.000	3.59
78.75 - 101.25	E	0.012	0.373	0.688	0.572	0.618	0.385	0.210	0.047	0.000	0.000	0.000	2.90
101.25 - 123.75	ESE	0.000	0.187	0.292	0.513	1.097	0.560	0.222	0.082	0.012	0.023	0.000	2.99
123.75 - 146.25	SE	0.000	0.082	0.222	0.327	0.992	1.353	1.482	1.248	1.587	0.175	0.023	7.49
146.25 - 168.75	SSE	0.000	0.070	0.175	0.525	1.493	1.155	0.910	1.202	1.167	0.222	0.012	6.93
168.75 - 191.25	S	0.000	0.105	0.327	0.408	1.178	1.108	1.108	1.318	0.688	0.140	0.047	6.43
191.25 - 213.75	SSW	0.000	0.058	0.198	0.443	1.400	1.598	1.272	0.560	0.198	0.093	0.058	5.88
213.75 - 236.25	SW	0.000	0.128	0.338	0.700	2.333	2.123	1.027	0.327	0.105	0.012	0.000	7.09
236.25 - 258.75	WSW	0.012	0.093	0.373	0.572	2.345	2.112	0.875	0.362	0.152	0.012	0.000	6.91
258.75 - 281.25	W	0.000	0.093	0.315	0.327	1.423	1.482	0.922	0.432	0.362	0.058	0.035	5.45
281.25 - 303.75	WNW	0.000	0.082	0.210	0.397	1.190	1.365	1.237	1.260	1.178	0.128	0.023	7.07
303.75 - 326.25	NW	0.000	0.093	0.373	0.490	1.447	1.937	2.053	1.820	2.182	0.723	0.058	11.18
326.25 - 348.75	NNW	0.012	0.105	0.210	0.443	1.283	2.147	1.517	1.493	1.097	0.303	0.023	8.63

Total 100.00

MISSING HOURS: 188
 JOINT DATA RECOVERY: 97.9%

APPENDIX B

MPC Data

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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

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
	Sb-126	3E-6	3E-6
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
	Br-83	3E-6	3E-6
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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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
Chlorine (17)	Cs-137	2E-5	4E-5
	Cl-36	8E-5	6E-5
Chlorine (17)	Cl-38	4E-4	4E-4
	Chromium (24)	Cr-51	2E-3
Cobalt (27)	Co-57	5E-4	4E-4
	Co-58m	3E-3	2E-3
	Co-58	1E-4	9E-5
Cobalt (27)	Co-60	5E-5	3E-5
	Copper (29)	Cu-64	3E-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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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-130	3E-6	3E-6
	I-131	3E-7	6E-5
	I-132	8E-6	2E-4
	I-133	1E-6	4E-5
	I-134	2E-5	6E-4
Iridium (77)	I-135	4E-6	7E-5
	Ir-190	2E-4	2E-4
	Ir-192	4E-5	4E-5
	Ir-194	3E-5	3E-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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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-103m	3E-6	3E-6
	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

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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
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
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

Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
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
	Y-93	3E-5	3E-5
Zinc (30)	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 radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than 2 hours		3E-6	3E-6
Any single radionuclide 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 $\mu\text{Ci/ml}$.
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").

APPENDIX C

2013 Radiological Groundwater Protection Program (RGPP) Report

Results of the Integrated Tritium Management Program

With

2013 Radiological Groundwater Protection Program (RGPP)

And

2013 Monitoring Well and Remedial Investigation Work Plan

2013 RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT

PSEG Nuclear has a series of wells on the property to monitor groundwater that encompass the entire site. The Integrated Tritium Management Plan has divided the wells into four broad programs:

The Radiological Groundwater Protection Program (RGPP), which is a program to ensure that any leak of radioactive material from underground piping is quickly detected.

The Remedial Investigation Work Plan (RIWP), which is a program that is mitigating radioactive material from a past leak from Salem Unit 1's spent fuel pool.

A series of monitoring wells that fill potential gaps between the RGPP and the RIWP.

Periphery wells were installed outside of the protected area to support the potential licensing of a new nuclear plant (Early Site Permit Wells.) The well details from the Early Site Permit wells are not part of this report, but the results of the samples are included.

The RGPP was initiated by PSEG in 2006 to determine whether groundwater at and in the vicinity of Salem and Hope Creek Stations had been adversely impacted by any releases of radionuclides and provides the mechanism to detect such releases if they occur. The RGPP is a voluntary program implemented by PSEG in conjunction with the nuclear industry initiatives and associated guidance (NEI, 2007). The other key elements that comprise the RGPP and contribute to public safety are spill/leak prevention, effective remediation of spills and leaks, and effective stakeholder communication.

In 2002, operations personnel at Salem Generating Station identified a release of radioactive liquids from the Unit 1 Spent Fuel Pool to the environment. PSEG developed a Remedial Action Work Plan (RAWP). This RAWP was reviewed by the United States Regulatory Commission (USNRC) and approved by the New Jersey Department of Environmental Protection (NJDEP) Bureau of Nuclear Engineering (BNE). A Groundwater Recovery System (GRS) was installed and is in operation to remove the groundwater containing tritium. This system was designed to limit the migration of the tritium plume towards the plant boundary. The GRS is fully discussed in the quarterly Remedial Action Progress Reports (RAPR) provided to the State and the U.S. Nuclear Regulatory Commission by PSEG. Some of the wells on the plant perimeter have detectable tritium: PSEG has conservatively assumed that the tritium has reached the Delaware River, calculated the resultant exposure and included the results in the liquid effluent data reported earlier in this document.

PSEG's Salem and Hope Creek Generating Stations are located in a flat, largely undeveloped region of southern New Jersey. The Site is bordered on the west and south by the Delaware River Estuary and on the east and north by extensive marshlands. Both of the sites obtain cooling water from the Delaware River Estuary and discharge it back to the Delaware River Estuary.

The two sites are underlain by over 1,000 feet of inter-layered sand, silt and clay. The Salem and Hope Creek sites derive potable and sanitary water from deep wells in the Potomac-Raritan-Magothy (PRM) formations more than 600 feet below the surface.

There are no potable wells off-site within at least three miles. The nearest potable supply well is located 3.65 miles away in the state of Delaware. In the vicinity of the site there are no public water supply wells or private wells that can be impacted by radionuclides associated with nuclear station operations.

The results of the RGPP are presented first and the well results from the remainder of the program are presented later.

Radiological Groundwater Protection Program

This is the annual report on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Salem and Hope Creek Generating Stations. This report covers the RGPP groundwater samples collected from the PSEG site in 2013. This report also describes any changes to the program and provides selected radiochemical analysis results for groundwater samples collected during the 2013 reporting year.

Objectives of the Radiological Groundwater Protection Program

The long-term sampling program objectives are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment or potential drinking water sources can occur.
2. Understand the local hydro-geologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.
3. Evaluate systems, structures, components and work practices which have the potential to allow a release of licensed radioactive material to the groundwater.
4. Perform routine water sampling from strategic locations and evaluate radiochemical analysis results.
5. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
6. Regularly evaluate analytical results to identify adverse trends.
7. Take necessary corrective actions to protect groundwater resources.

Sample Collection

In 2006, the RGPP monitoring wells (Tables 1 and 2, Monitoring Well Construction Details) were installed for both Salem and Hope Creek as part of the Site Investigation Report (ARCADIS, 2006A and 2006B). Groundwater samples are collected from all RGPP monitoring wells at least semi-annually with additional monitoring conducted as appropriate. Sampling protocols were developed with USEPA and NJDEP guidance; a modified low-flow sampling methodology is used. This methodology is consistent with protocols established for the Salem GRS investigation.

New Wells

No new wells were added to the RGPP program.

Sample Analysis

This section describes the general analytical methodologies used to analyze the water samples for radioactivity for the Hope Creek and Salem Generating Stations RGPP. RGPP samples are also analyzed for plant-related gamma emitting radionuclides (semi-annually), strontium (annually), and iron 55 (biennially) and tritium (every sample) by a radiochemical analytical laboratory.

The tritium analysis results reported were obtained from Teledyne Brown Engineering (TBE) Laboratory located in Knoxville, TN. The gamma spectroscopy, strontium and iron analysis results are also performed by TBE. Analytical laboratories are subject to internal quality assurance programs and

inter-laboratory cross-check programs. Station personnel review and evaluate all analytical data obtained from these laboratories.

Data Evaluation

This section describes the method used to evaluate the analytical results for samples obtained at the Hope Creek and Salem Generating Stations. Analytical data results are reviewed for adverse trends or anomalous data. Investigations and notifications are made as required by program procedures. The radiological data collected since the inception of the RGPP program is the basis for the baseline statistical evaluation to which current operational data are compared. Several factors are important in the interpretation and evaluation of the radiological data:

- **Detection limits**

The detection limit is specified by PSEG as a minimum sensitivity value that must be achieved routinely by the analytical method.

The Offsite Dose Calculation Manual (ODCM) specifies detection capabilities for each isotope that may be produced by Salem or Hope Creek stations. The detection capability tritium in the ODCM is 3000 pCi/L in water. However, RGPP tritium analyses are performed to a lower value of 200 pCi/L. Each well has an associated action level resulting in increased monitoring and determination of the source of any contamination when exceeded.

- **Laboratory Measurements Uncertainty**

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. PSEG's requirement is to report results with a 95% level of confidence.

Analytical uncertainties are reported at the 95% confidence level in this report and are consistent with the methodologies used to report data in the AREOR.

RGPP Data Quality

Groundwater samples consist of at least four aliquots. One of the aliquots is submitted to the onsite chemistry laboratory for initial screening which includes gamma and tritium analysis.

The second aliquot is sent to the TBE Laboratory for tritium analysis. The third aliquot is submitted to GEL Laboratories.

The fourth aliquot is held as a back-up sample until all the analytical results were received and determined to be valid.

- Internal Administrative Control Limits are defined within the RGPP procedures. They are developed based on a statistical analysis of the historical baseline concentrations of tritium in each specific well and are used to identify tritium concentrations that warrant further investigation for that specific well. Exceeding Administrative Control Limits usually does not initiate any external reporting unless the sample results exceed the regulatory limit of 20,000 pCi/L.

- The Courtesy Communication Limit is a tritium concentration, below regulatory requirements, based on agreements with NJDEP-BNE, USNRC and other stakeholders ensuring the stakeholders are cognizant of potential issues. PSEG provides a courtesy communication by telephone no later than the end of the next business day to NJDEP-BNE for any RGPP confirmed tritium result that exceeds 3,000 pCi/L. The NRC Site Resident is also informed. This is not a regulatory required communication.
- Voluntary Communication Limits are those concentrations of radionuclides that require voluntary communication and reporting to regulators and/or stakeholders based on NEI 07-07 and the ODCM.

Discussion

The locations of the RGPP monitoring wells are illustrated on the maps for Hope Creek and Salem in Figures 1 and 2, respectively. The Monitoring Well Construction Details for Hope Creek and Salem including monitoring interval below ground surface are provided in Table 1, Hope Creek RGPP Monitoring Wells: Construction Details and Table 2, Salem RGPP Monitoring Wells: Construction Details. The relevant radiological groundwater parameters used to evaluate the groundwater data are provided in Table 3, Relevant Groundwater Evaluation Criteria: Salem and Hope Creek Generating Stations.

The 2013 Groundwater Tritium Analytical Results for Hope Creek and Salem Generating Stations are shown in Tables 4 and 5.

Groundwater Results - RGPP

Samples were collected from RGPP monitoring wells during 2013 in accordance with the station and LTS procedures for the radiological groundwater protection program.

The Site Conceptual Model was revalidated and the Site Investigation Report was updated in 2012. No changes to the RGPP were required based on these updates.

Hope Creek Generating Station RGPP Wells

The results of the laboratory analysis indicate that tritium was not detected, i.e., reported at a concentration below the detection limit of 200 pCi/L, in eight of the 13 RGPP monitoring wells at the Hope Creek site. The tritium concentrations measured at Wells BH, BI, BL, BP, BQ, BR, BS and BT were all less than the LLD of 200 pCi/L during 2013, shown on Table 4.

- Tritium was detected at Well BJ at a maximum of 725 pCi/L and had an average 561 with a low of 270 pCi/L during the 2013 sampling period. Well BJ is located down gradient of the Condensate Storage Tank (CST) and is a sentinel (source) well for the CST.
- Tritium was detected at Well BK at a maximum of 233 pCi/L and ranged from non-detectable to 233 pCi/L during the 2013 sampling period. Well BK is located due west of the reactor containment and is a perimeter well.
- Tritium was detected at Well BM at a maximum of 276 pCi/L and was non-

detectable to just above the detection limits during the 2013 sampling period. Well BM is located west of the abandoned Unit 2 reactor building and is a sentinel (source) well for facilities and buried piping.

- Tritium was detected at Well BN at a maximum of 573 pCi/L and had an average of 383 pCi/L during the 2013 sampling period. Well BN is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.
- Tritium was detected at Well BO at a maximum of 398 pCi/L and was non-detectable pCi/L three times during the 2013 sampling period. Well BO is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.

In accordance with station procedures, a sample analysis result that is above the administrative limit is re-sampled for a confirmatory analysis. The administrative limits for all station wells were developed by statistical analysis of the historical well data.

There were no analytical results for which a Courtesy Communication (greater than 3,000 pCi/L tritium) was required as part of the RGPP. The tritium concentrations in these wells are being monitored and trended.

Excepting tritium no plant-related radionuclides were detected in any RGPP well sampled in 2013. Naturally occurring Potassium-40 was detected in several of the wells sampled during 2013.

Salem Generating Station RGPP Wells

The results of the laboratory analysis indicate that tritium was not detected, i.e., reported at a concentration below the detection limit of 200 pCi/L, in six of the 13 RGPP monitoring wells at the Salem site. The tritium concentrations measured at Wells BA, BB, BF, BU, T, and Y were all less than the detection specification of 200 pCi/L during 2013 as shown on Table 5.

- Tritium was detected at Well AL at a maximum of 796 pCi/L, and an average of 572 pCi/L for the 12 samples. Well AL is located south of the Salem Unit 1 reactor building and is a sentinel (source) well.
- Tritium was detected at Well BC at a maximum of 573 pCi/L and ranged from non-detectable to 573 pCi/L during the 2013 sampling period. Well BC is a sentinel (source)/perimeter well located southwest of Facilities, Refueling Water Storage Tank, Auxiliary Feedwater Storage Tank and Primary Water Storage Tank (RAP) tanks and piping.
- Tritium was detected at Well BD at a maximum of 759 pCi/L and had an average of 462 pCi/L for the 12 samples. Well BD is located to the west of Salem Unit 2 reactor building and is a sentinel (source) well for Facilities, RAP tanks, and piping.
- Tritium was detected at Well BE at a maximum of 1230 pCi/L and had an average of 538 pCi/L for the 9 samples. Well BE is located to the west of Salem Unit 2 reactor building and is a perimeter well.
- Tritium was detected at Well BG at a maximum of 1520 pCi/L and had an average of 666 pCi/L for the 12 samples. Well BG is located northwest of Salem Unit 2 reactor building and is a perimeter well.

- Tritium was detected at Well U at a maximum of 469 pCi/L and ranged from non-detectable to 469 pCi/L during the 2013 sampling period. Well U is located north of Salem Unit 2 reactor building and is a sentinel (source) well for the House Heating Boilers.
- Tritium was detected at Well Z at a maximum of 892 pCi/L and had an average of 666 pCi/L for the 12 samples. Well Z is located west of Salem Units 1&2 reactor buildings and is a perimeter well.

There were no analytical results for which a Courtesy Communication (greater than 3,000 pCi/L tritium) was required as part of the RGPP. The tritium concentrations in these wells are being monitored and trended.

Excepting tritium, no plant-related gamma emitters or other plant related radionuclides were detected in any RGPP well sampled in 2013.

Investigations

Recapture Evaluation

PSEG has implemented an evaluation of the potential for tritium recapture from permitted gaseous effluent releases. Most of the RGPP wells which were designed as vault (flush mounted wells) were converted to stick mount (above ground level) in December 2010. The rationale behind this is that the vault mounted wells are in low lying areas which collect runoff from precipitation. Some tritium, released as a permitted discharge via the Salem and Hope Creek plant vents, will be re-captured when moisture condenses (rain, snow, sleet, fog) and then is washed into the vaults of the RGPP wells. Conversion of these wells has removed the vaults and places the height of the well opening at

approximately 3-4 feet above ground surface, thus removing the pooling of rainwater in the vault and around the well casing.

The nuclear industry has detected tritium in water vapor and rainwater around plants coincident with permitted gaseous releases of tritium. Through a number of evaluations the industry has identified that permitted gaseous releases of tritium can be recaptured from the atmosphere as water vapor. The potential pathways followed by tritium at the site are evaluated. Tritium exchanges between atmospheric water vapor and liquid or solid water, therefore the permitted release of gaseous tritium is routinely exchanged from the atmosphere into the liquid water in the vadose zone. During average precipitation accumulation timeframes, this rain water with elevated tritium concentrations flows slowly into the groundwater. During the abnormally high precipitation, such as the hurricane experienced during the summer of 2011, the rain water with elevated tritium concentrations can be flushed from the vadose zone and flows rapidly through shallow groundwater, which was detected in the Riverbed Deposits monitored by the RGPP wells. Tritium concentrations returned to historical concentration ranges in subsequent sampling.

Past Spills and Leaks: Impacts to Groundwater

Historical unplanned releases on site are listed in Table 8, Salem and Hope Creek 10CFR50.75 (g) Data. There are currently no known active unmonitored releases into the groundwater at Salem or Hope Creek Stations.

In conclusion, the operation of Salem and Hope Creek Stations has had minimal adverse radiological impact on the environment from unmonitored or unplanned releases of radionuclides.

RGPP 2014 Status

The RGPP long-term sampling program will be modified as required to meet the RGPP objectives. Baseline sampling and analysis of groundwater will continue on the following schedule:

- Tritium will be analyzed at least semi-annually each calendar year to a detection capability of 200 pCi/L;
- Plant-related gamma emitters will be analyzed semi-annually to the Environmental detection limits specified in the ODCM;
- RGPP monitoring well sample frequency will be adjusted based on analytical results.

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Hope Creek RGPP Monitoring Wells: Construction Details

	Installation	Construction	Diameter	Total Depth	Monitoring Interval	MP Elevation	MP Elevation	Monitoring Purpose	Source Targets
Well ID	Date	Details	(inches)	(feet bgs)	(feet bgs)	(feet RPD)	(feet MSL)		
Well BH	May-06	Sch-40 PVC	4	37.0	27 - 37	97.92	8	Perimeter	NA
Well BI	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	99.6	9.68	Source	Facilities; Piping
Well BJ	May-06	Sch-40 PVC	4	38.0	28 - 38	100.23	10.31	Source	Condensate Storage & Transfer; Facilities; Piping
Well BK	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	98.19	8.27	Perimeter	NA
Well BL	May-06	Sch-40 PVC	4	35.0	25 - 35	99.71	9.79	Perimeter	NA
Well BM	May-06	Sch-40 PVC	4	38.0	28 - 38	99.76	9.84	Source	Facilities; Piping
Well BN	May-06	Sch-40 PVC	4	12.5	7.5 - 12.5	102.64	12.72	Source	Auxiliary Boiler Building; Piping
Well BO	May-06	Sch-40 PVC	4	36.0	26 - 36	97.98	8.06	Perimeter/Source	Building Sewage
Well BP	May-06	Sch-40 PVC	4	38.0	28 - 38	99.06	9.14	Perimeter/Source	Building Sewage
Well BQ	May-06	Sch-40 PVC	4	42.0	32 - 42	102.16	12.24	Source	Auxiliary Boiler Building; Dry Cask Storage Building; Piping
Well BR	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	104.28	14.36	Perimeter/Source	Piping; Dry Cask Storage Building
Well BS	May-06	Sch-40 PVC	4	35.0	25 - 35	100.55	10.63	Upgradient	NA
Well BT	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	99.60	9.68	Upgradient	NA

Notes:

MP Measuring Point
 bgs Below ground surface
 RPD Relative to plant datum
 MSL Relative to mean sea level (NAVD 1988)
 NA Not applicable

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Salem RGPP Monitoring Wells: Construction Details

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet MSL)	Monitoring Purpose	Source Targets
Well T	Jun-03	Sch-40 PVC	2	31.2	21.2 - 31.2	104.13	14.21	Source	Facilities; House Heating Boiler
Well U	May-03	Sch-40 PVC	2	32.2	27.2 - 32.2	98.57	8.65	Source	Facilities; House Heating Boiler
Well Y	Sep-03	Sch-40 PVC	2	37.0	27.0 - 35.0	101.81	11.89	Perimeter	NA
Well Z	Sep-03	Sch-40 PVC	2	37.5	27.5 - 37.5	101.86	11.94	Perimeter	NA
Well AL	Jan-04	Sch-40 PVC	2	25.3	15.3 - 25.3	99.13	9.21	Perimeter	NA
Well BA	May-06	Sch-40 PVC	4	39.5	29.5 - 39.5	101.07	11.15	Perimeter	NA
Well BB	May-06	Sch-40 PVC	4	47.0	37 - 47	99.38	9.46	Perimeter	NA
Well BC	May-06	Sch-40 PVC	4	38.0	28 - 38	98.78	8.86	Source / Perimeter	Facilities; RAP Tanks; Piping
Well BD	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	98.78	8.86	Source	Facilities; RAP Tanks; Piping
Well BE	May-06	Sch-40 PVC	4	37.0	27 - 37	98.31	8.39	Perimeter	NA
Well BF	May-06	Sch-40 PVC	4	42.5	32.5 - 42.5	99.11	9.19	Perimeter	NA
Well BG	May-06	Sch-40 PVC	4	37.0	27 - 37	100	10.08	Perimeter	NA
Well BU	May-06	Sch-40 PVC	4	36.0	26 - 36	100.16	10.24	Upgradient	NA

Notes:

- MP Measuring Point
- bgs Below ground surface
- RPD Relative to plant datum
- MSL Relative to mean sea level (NAVD 1988)
- NA Not applicable
- NAD 83 North American Datum 1983

Relevant Groundwater Evaluation Criteria: Salem and Hope Creek Generating Stations

Isotope	RGPP LLD (pCi/L)	PSEG ODCM Reporting Level (pCi/L)
Tritium	200	30,000
Total Strontium	2	8
Mn-54	15	1000
Fe-59	30	400
Co-60	15	300
Zn-65	30	300
Nb-95	15	400
Zr-95	15	200
Cs-134	15	30
Cs-137	18	50
Ba-140	60	200
La-140	15	200

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Hope Creek RGPP Wells Tritium Results							
Name	Date	Concentration		Name	Date	Concentration	
WELL BH	3/13/2013	< 167	pCi/L	WELL BN	1/18/2013	289	pCi/L
	6/20/2013	< 184	pCi/L		2/12/2013	306	pCi/L
	9/17/2013	< 172	pCi/L		3/11/2013	314	pCi/L
	11/11/2013	< 171	pCi/L		4/8/2013	375	pCi/L
WELL BI	1/15/2013	< 167	pCi/L		5/13/2013	446	pCi/L
	2/12/2013	< 199	pCi/L		6/26/2013	533	pCi/L
	3/13/2013	< 163	pCi/L		7/8/2013	408	pCi/L
	4/11/2013	< 178	pCi/L		8/12/2013	573	pCi/L
	5/13/2013	< 184	pCi/L		9/16/2013	424	pCi/L
	6/20/2013	< 179	pCi/L		10/7/2013	380	pCi/L
	7/8/2013	< 191	pCi/L		11/18/2013	207	pCi/L
	8/14/2013	< 178	pCi/L		12/9/2013	337	pCi/L
	9/16/2013	< 176	pCi/L		WELL BO	1/17/2013	360
	10/7/2013	< 161	pCi/L	2/12/2013		173	pCi/L
	11/11/2013	< 175	pCi/L	3/13/2013		305	pCi/L
	12/10/2013	< 172	pCi/L	4/8/2013		267	pCi/L
WELL BJ	1/14/2013	537	pCi/L	5/13/2013		398	pCi/L
	2/11/2013	661	pCi/L	6/26/2013		267	pCi/L
	3/13/2013	646	pCi/L	7/8/2013		< 190	pCi/L
	4/11/2013	678	pCi/L	8/12/2013		313	pCi/L
	5/13/2013	614	pCi/L	9/16/2013		252	pCi/L
	6/20/2013	505	pCi/L	10/7/2013		< 169	pCi/L
	7/9/2013	562	pCi/L	11/18/2013		310	pCi/L
	8/15/2013	270	pCi/L	12/17/2013		< 175	pCi/L
	9/17/2013	480	pCi/L	WELL BP	1/17/2013	< 177	pCi/L
	10/7/2013	472	pCi/L		2/11/2013	< 166	pCi/L
	11/12/2013	725	pCi/L		3/12/2013	< 165	pCi/L
	12/10/2013	587	pCi/L		4/8/2013	< 188	pCi/L
WELL BK	6/20/2013	< 182	pCi/L		5/13/2013	< 184	pCi/L
	11/11/2013	233	pCi/L		6/26/2013	< 182	pCi/L
WELL BL	6/20/2013	< 179	pCi/L		7/8/2013	< 195	pCi/L
	11/11/2013	< 165	pCi/L		8/12/2013	< 193	pCi/L
WELL BM	1/15/2013	< 189	pCi/L		9/16/2013	< 171	pCi/L
	2/12/2013	< 184	pCi/L		10/7/2013	< 168	pCi/L
	3/12/2013	166	pCi/L		11/18/2013	< 188	pCi/L
	4/11/2013	276	pCi/L		12/9/2013	< 172	pCi/L
	5/13/2013	< 184	pCi/L	WELL BR	1/18/2013	< 196	pCi/L
	6/21/2013	245	pCi/L		2/11/2013	< 168	pCi/L

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Hope Creek RGPP Wells Tritium Results									
Name	Date	Concentration		Name	Date	Concentration			
	7/8/2013	210	pCi/L		3/12/2013	< 164	pCi/L		
	8/14/2013	< 178	pCi/L		4/8/2013	< 193	pCi/L		
	9/16/2013	247	pCi/L		5/13/2013	< 184	pCi/L		
	10/7/2013	214	pCi/L		6/25/2013	< 181	pCi/L		
	11/11/2013	248	pCi/L		7/8/2013	< 174	pCi/L		
	12/10/2013	< 176	pCi/L		8/12/2013	< 166	pCi/L		
WELL BQ	1/22/2013	< 178	pCi/L			9/16/2013	< 173	pCi/L	
	2/13/2013	< 165	pCi/L			10/7/2013	< 185	pCi/L	
	3/20/2013	< 171	pCi/L			11/18/2013	< 188	pCi/L	
	4/9/2013	< 177	pCi/L			12/10/2013	< 171	pCi/L	
	5/20/2013	< 180	pCi/L			WELL BS	6/25/2013	< 182	pCi/L
	6/25/2013	< 183	pCi/L				11/18/2013	< 188	pCi/L
	7/15/2013	< 188	pCi/L	WELL BT	6/26/2013	< 184	pCi/L		
	8/19/2013	< 178	pCi/L		11/13/2013	< 183	pCi/L		
	9/16/2013	< 189	pCi/L						
	10/7/2013	< 182	pCi/L						
	11/11/2013	< 180	pCi/L						
	12/16/2013	< 180	pCi/L						

2013 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Salem RGPP Wells Tritium Results							
Name	Date	Concentration		Name	Date	Concentration	
WELL AL	1/18/2013	796	pCi/L	WELL BF	1/16/2013	< 188	pCi/L
	2/15/2013	710	pCi/L		2/13/2013	< 183	pCi/L
	3/21/2013	624	pCi/L		3/13/2013	< 174	pCi/L
	4/8/2013	543	pCi/L		4/10/2013	< 197	pCi/L
	5/15/2013	508	pCi/L		5/14/2013	< 182	pCi/L
	6/25/2013	665	pCi/L		6/19/2013	< 188	pCi/L
	7/15/2013	428	pCi/L		11/14/2013	< 188	pCi/L
	8/20/2013	380	pCi/L		WELL BG	1/14/2013	712
	9/23/2013	459	pCi/L	2/18/2013		1520	pCi/L
	10/8/2013	684	pCi/L	3/15/2013		896	pCi/L
	11/13/2013	510	pCi/L	4/11/2013		1080	pCi/L
	12/13/2013	564	pCi/L	5/14/2013		719	pCi/L
WELL BA	6/19/2013	< 191	pCi/L	6/21/2013		377	pCi/L
	11/19/2013	< 179	pCi/L	7/8/2013		374	pCi/L
WELL BB	6/19/2013	< 189	pCi/L	8/15/2013		444	pCi/L
	11/19/2013	< 177	pCi/L	9/19/2013	574	pCi/L	
WELL BC	1/21/2013	216	pCi/L	10/8/2013	413	pCi/L	
	2/12/2013	243	pCi/L	11/12/2013	345	pCi/L	
	3/15/2013	573	pCi/L	12/11/2013	540	pCi/L	
	4/9/2013	181	pCi/L	WELL BU	6/26/2013	< 178	pCi/L
	5/15/2013	193	pCi/L		11/13/2013	< 182	pCi/L
	6/25/2013	294	pCi/L	WELL T	1/16/2013	< 173	pCi/L
	7/11/2013	271	pCi/L		2/12/2013	< 192	pCi/L
	8/20/2013	294	pCi/L		3/13/2013	< 172	pCi/L
	9/19/2013	262	pCi/L		4/11/2013	< 181	pCi/L
	10/9/2013	218	pCi/L		5/14/2013	< 188	pCi/L
11/14/2013	< 188	pCi/L	6/25/2013		< 195	pCi/L	
12/17/2013	220	pCi/L	7/9/2013		< 189	pCi/L	
WELL BD	1/29/2013	424	pCi/L		8/15/2013	< 192	pCi/L
	2/22/2013	330	pCi/L	9/18/2013	< 183	pCi/L	
	3/27/2013	328	pCi/L	10/8/2013	< 193	pCi/L	
	4/10/2013	271	pCi/L	11/13/2013	< 188	pCi/L	
	5/22/2013	227	pCi/L	12/11/2013	< 193	pCi/L	
	6/24/2013	631	pCi/L	WELL U	1/15/2013	469	pCi/L
	7/16/2013	759	pCi/L		2/12/2013	343	pCi/L
	8/20/2013	530	pCi/L		3/13/2013	365	pCi/L
	9/23/2013	410	pCi/L		4/11/2013	< 179	pCi/L
	10/9/2013	575	pCi/L		5/14/2013	289	pCi/L

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Salem RGPP Wells Tritium Results							
Name	Date	Concentration		Name	Date	Concentration	
WELL BE	11/11/2013	592	pCi/L	WELL Z	6/25/2013	349	pCi/L
	12/16/2013	465	pCi/L		7/8/2013	270	pCi/L
	3/13/2013	1230	pCi/L		8/15/2013	294	pCi/L
	5/15/2013	525	pCi/L		9/19/2013	322	pCi/L
	6/25/2013	623	pCi/L		10/8/2013	210	pCi/L
	7/10/2013	480	pCi/L		11/14/2013	< 188	pCi/L
	8/15/2013	442	pCi/L		12/18/2013	273	pCi/L
	9/20/2013	404	pCi/L		1/21/2013	581	pCi/L
	10/9/2013	451	pCi/L		2/12/2013	524	pCi/L
	11/12/2013	327	pCi/L		3/15/2013	523	pCi/L
	12/17/2013	357	pCi/L		4/9/2013	486	pCi/L
	WELL Y	1/21/2013	< 192		pCi/L	5/16/2013	601
2/12/2013		< 190	pCi/L	6/21/2013	684	pCi/L	
3/15/2013		< 166	pCi/L	7/10/2013	891	pCi/L	
4/9/2013		< 178	pCi/L	8/14/2013	892	pCi/L	
5/16/2013		< 183	pCi/L	9/17/2013	873	pCi/L	
6/21/2013		< 170	pCi/L	10/8/2013	662	pCi/L	
7/10/2013		< 182	pCi/L	11/14/2013	672	pCi/L	
8/14/2013		< 186	pCi/L	12/20/2013	606	pCi/L	
9/17/2013		< 179	pCi/L				
10/8/2013		< 193	pCi/L				
11/14/2013		< 188	pCi/L				
12/20/2013		< 190	pCi/L				

INVESTIGATION AND MONITORING WELL DATA

The Remedial Investigation Work Plan (RIWP) was initiated in 2004 to address the investigation and remediation of tritium associated with Salem Unit 1 spent fuel pool leak. This RIWP was written in accordance with New Jersey Administrative Code (N.J.A.C.) 7:26E (Technical Requirements for Site Remediation), Subchapter 4: Remedial Investigations, as well as regulations and guidance from the United States Environmental Protection Agency (USEPA) and United States Nuclear Regulatory Commission (USNRC). On site wells were drilled to establish the parameters of the on-site contamination. This program consists of pumping selected wells contaminated by the spent fuel pool leak to decrease the contaminated area and concentration of tritium.

As explained in the RGPP section, well data can be affected by recapture of plant effluents, leading to elevated results close to the station. Any abnormal result is carefully evaluated to ensure that the source is not from a leak in the plant facility.

The reporting limits for tritium in the Radiological Groundwater Protection Program in the previous section do not apply to the wells in this program.

A thorough review of data from the existing monitoring well network indicates that small quantities of tritiated water might be progressing to the river from the site through the groundwater pathway. Conservative estimates of the quantity and potential exposure have been included in the data in the front of this report.

PSEG retrofitted eight existing wells (Wells BB, BF, BG, BW, BX, CA, U, and V) by converting flush-mount and vault surface completions to stick-up protective casings. To minimize storm water overland flow from entering the well, casings were extended approximately 3 feet above ground surface and fitted with a water tight cap. Field inspections identified that the surface completions for Wells DA and W allowed excessive storm water to enter; however, these wells are not located in an area which is conducive for the placement of a stick-up casing. To minimize the potential for storm water infiltration into the well casing, a flush-mount was installed and was backfilled with concrete in the vault containing Well W. The flush mount for Well DA was repaired by adding grout to improve the seal and inhibit infiltration.

PSEG installed monitoring well AA-V, to characterize groundwater within the Vincentown Formation downgradient of the historical SFP release investigation area. This well was installed in June 2013 as part of the Salem Unit 1 Remedial Action Work Plan.

Investigation Objectives

The investigation has the following two primary goals:

- Determine whether the concentrations of tritium detected in groundwater samples collected at the site are the result of a discharge from a particular source.
- Assess whether the tritium detected in the groundwater near SGS Unit 2 requires the need for any further action.

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Investigation and Monitoring Wells Construction Details							
Well ID	Date Installed	Reference Point Elevation (site datum)	Reference Point Elevation (NAVD 1988)	Total Depth (btoc)	Monitoring Interval (feet bgs)	Well Casing Diameter (inch)	Monitored Hydrogeologic Unit
Well K	Feb-2003	102.00	12.08	80.0	70.0 - 80.0	2	Vincentown ¹
Well L	Jan-2003	101.46	11.54	80.0	70.0 - 80.0	2	Vincentown ¹
Well M	May-2003	102.17	12.25	20.0	10.0 - 20.0	1	Cofferdam ²
Well N	Jan-2003	101.65	11.73	20.0	10.0 - 20.0	2	Cofferdam ²
Well O	Jan-2003	101.33	11.41	20.0	10.0 - 20.0	2	Cofferdam ²
Well P	Mar-2003	101.13	11.21	80.0	70.0 - 80.0	2	Vincentown ¹
Well Q	Mar-2003	106.59	16.67	80.0	70.0 - 80.0	2	Vincentown ¹
Well R	Jun-2003	102.35	12.43	19.0	9.0 - 19.0	1	Cofferdam ²
Well S ⁴	May-2003	99.04	9.12	34.7	24.7 - 34.7	2	Shallow ³
Well V ⁴	Jun-2003	98.74	8.82	79.5	69.5 - 79.5	2	Vincentown ¹
Well W ⁴	Jun-2003	98.26	8.34	35.0	25.0 - 35.0	2	Shallow ³
Well AA ⁴	Sep-2003	99.07	9.15	36.0	26.0 - 36.0	2	Shallow ³
Well AA-V	May-2013	109.8	10.88	85	75.0 - 85.0	2	Vincentown ¹
Well AB ⁴	Oct-2003	98.93	9.01	42.0	32.0 - 42.0	2	Shallow ³
Well AC ⁴	Sep-2003	98.77	8.85	24.0	14.0 - 24.0	2	Cofferdam ²
Well AD ⁴	Oct-2003	98.99	9.07	43.0	33.0 - 43.0	6	Shallow ³
Well AE	Oct-2003	101.54	11.62	37.5	27.5 - 37.5	2	Cofferdam ²
Well AF	Oct-2003	101.61	11.69	45.0	35.0 - 45.0	2	Shallow ³
Well AG-Shallow	Feb-2004	99.29	9.37	24.2	14.2 - 24.2	1	Shallow ³
Well AG-Deep	Feb-2004	99.20	9.28	40.0	30.0 - 40.0	1	Shallow ³
Well AH-	Feb-2004	102.58	12.66	24.5	14.5 - 24.5	1	Shallow ³

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Investigation and Monitoring Wells Construction Details							
Well ID	Date Installed	Reference Point Elevation (site datum)	Reference Point Elevation (NAVD 1988)	Total Depth (btoc)	Monitoring Interval (feet bgs)	Well Casing Diameter (inch)	Monitored Hydrogeologic Unit
Shallow							
Well AH-Deep	Feb-2004	102.70	12.78	40.0	30.0 - 40.0	1	Shallow ³
Well AI	Jan-2004	98.79	8.87	22.0	12.0 - 22.0	4	Cofferdam ²
Well AJ	Jan-2004	98.85	8.93	35.3	15.3 - 35.3	4	Shallow ³
Well AM	Jan-2004	98.55	8.63	20.9	10.9 - 20.9	4	Cofferdam ²
Well AN	Jun-2004	98.76	8.84	25.0	10.0 - 25.0	4	Cofferdam ²
Well AO	Jun-2004	98.82	8.90	21.0	11.0 - 21.0	4	Cofferdam ²
Well AP	Jun-2004	98.65	8.73	40.0	15.0 - 40.0	4	Shallow ³
Well AQ	Jun-2004	99.05	9.13	45.0	20.0 - 45.0	4	Shallow ³
Well AR	Jun-2004	99.22	9.30	43.0	18.0 - 43.0	4	Shallow ³
Well AS	Jun-2004	99.44	9.52	41.5	16.5 - 41.5	4	Shallow ³
Well AT	Jun-2004	99.25	9.33	44.0	19.0 - 44.0	4	Shallow ³
Well BW	Dec-2006	98.68	8.76	10	10.0 - 15.0	2	Shallow ³
Well BX	Dec-2006	98.66	8.74	10	10.0 - 15.0	2	Shallow ³
Well BY	Nov-2010	103.36	13.44	42.80	37.8 - 42.8	4	Shallow
Well BZ	Nov-2010	104.29	14.37	39.06	29.0 - 39.0	4	Shallow
Well CA	Dec-2006	98.87	8.95	38.0	28.0 - 38.0	4	Shallow ²
Well CB	Dec-2006	98.98	9.06	80.0	70.0 - 80.0	2	Vincentown ³
Well DA	Nov-2010	98.93	9.01	16.0	17.0 - 22.0	4	Shallow ²
Well DB	Nov-2010	101.69	11.77	24.9	1.55 - 24.5	4	Shallow ²
Well DC	Nov-2010	100.9	10.98	25.4	20.0 - 25.0	4	Shallow ²
Well DD	Nov-2010	101.23	11.31	21.9	16.0 - 21.0	4	Shallow ²
Well DE	Nov-2010	101.43	11.51	20.9	15.0 - 20.0	4	Shallow ²

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Investigation and Monitoring Wells Construction Details							
Well ID	Date Installed	Reference Point Elevation (site datum)	Reference Point Elevation (NAVD 1988)	Total Depth (btoc)	Monitoring Interval (feet bgs)	Well Casing Diameter (inch)	Monitored Hydrogeologic Unit
Well DF	Nov-2010	101.32	11.40	21.3	16.0 - 21.0	4	Shallow ²
Well DG	Nov-2010	98.98	9.06	13.3	11.0 - 13.0	4	Shallow ²
Well DH	Nov-2010	101.54	11.62	24.6	19.5 - 24.5	4	Shallow ²
Well DI	Nov-2010	101.64	11.72	20.5	15.0 - 20.0	4	Shallow ²
Well DJ	Nov-2010	99.03	9.11	10.7	5.5 - 10.5	2	Shallow ²

Notes:

- MP Measuring Point
- bgs Below ground surface
- btoc Below top of inner casing
- RPD Relative to plant datum
- amsl Relative to mean sea level (North America Vertical Data NAVD 1988)
- 1 Monitoring well is screened in the Vincentown formation
- 2 Monitoring well is screened in the shallow, water bearing unit at a location within the limits of the cofferdam
- 3 Monitoring well is screened in the shallow, water bearing unit at a location outside the limits of the cofferdam
- 4 The surface completions of Monitoring Wells S, U, V, W, AA, AB, AC and AD were converted from above grade to flush-grade in February 2004

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Investigation and Monitoring Wells: Tritium Results							
Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AA	1/17/2013	1260	pCi/L	WELL BZ	1/14/2013	208	pCi/L
WELL AA	2/14/2013	1640	pCi/L	WELL BZ	2/12/2013	< 169	pCi/L
WELL AA	3/18/2013	1410	pCi/L	WELL BZ	3/21/2013	194	pCi/L
WELL AA	4/8/2013	1520	pCi/L	WELL BZ	4/11/2013	244	pCi/L
WELL AA	5/15/2013	1480	pCi/L	WELL BZ	5/13/2013	< 183	pCi/L
WELL AA	6/27/2013	1420	pCi/L	WELL BZ	6/24/2013	191	pCi/L
WELL AA	7/15/2013	1390	pCi/L	WELL BZ	7/9/2013	< 170	pCi/L
WELL AA	8/12/2013	1340	pCi/L	WELL BZ	8/13/2013	268	pCi/L
WELL AA	9/18/2013	1510	pCi/L	WELL BZ	9/17/2013	306	pCi/L
WELL AA	10/9/2013	1280	pCi/L	WELL BZ	10/7/2013	205	pCi/L
WELL AA	11/20/2013	1210	pCi/L	WELL BZ	11/12/2013	565	pCi/L
WELL AA	12/17/2013	1020	pCi/L	WELL BZ	12/10/2013	582	pCi/L
WELL AA-V	6/19/2013	9000	pCi/L	WELL CA	1/16/2013	983	pCi/L
WELL AA-V	6/27/2013	9600	pCi/L	WELL CA	2/13/2013	837	pCi/L
WELL AA-V	7/15/2013	7620	pCi/L	WELL CA	3/14/2013	1040	pCi/L
WELL AA-V	8/12/2013	8180	pCi/L	WELL CA	4/10/2013	1190	pCi/L
WELL AA-V	8/20/2013	6900	pCi/L	WELL CA	5/14/2013	947	pCi/L
WELL AA-V	9/16/2013	7970	pCi/L	WELL CA	6/26/2013	1090	pCi/L
WELL AA-V	9/23/2013	7800	pCi/L	WELL CA	7/10/2013	1060	pCi/L
WELL AA-V	10/27/2013	12800	pCi/L	WELL CA	8/14/2013	713	pCi/L
WELL AA-V	11/20/2013	9190	pCi/L	WELL CA	9/17/2013	745	pCi/L
WELL AA-V	12/20/2013	8200	pCi/L	WELL CA	10/8/2013	746	pCi/L
WELL AB	1/18/2013	25700	pCi/L	WELL CA	11/14/2013	754	pCi/L
WELL AB	2/15/2013	7030	pCi/L	WELL CA	12/11/2013	906	pCi/L
WELL AB	3/21/2013	34600	pCi/L	WELL CB	1/17/2013	429	pCi/L
WELL AB	4/11/2013	23400	pCi/L	WELL CB	2/13/2013	1360	pCi/L
WELL AB	5/20/2013	44600	pCi/L	WELL CB	3/15/2013	4020	pCi/L
WELL AB	6/27/2013	34700	pCi/L	WELL CB	4/11/2013	1330	pCi/L
WELL AB	7/16/2013	27600	pCi/L	WELL CB	5/14/2013	822	pCi/L
WELL AB	11/25/2013	22800	pCi/L	WELL DA	1/22/2013	1460	pCi/L
WELL AC-Grab	1/14/2013	64800	pCi/L	WELL DA	2/13/2013	3030	pCi/L
WELL AC-LF	1/14/2013	637000	pCi/L	WELL DA	3/14/2013	2870	pCi/L
WELL AC-Grab	1/23/2013	71000	pCi/L	WELL DA	4/10/2013	2060	pCi/L
WELL AC-LF	1/23/2013	468000	pCi/L	WELL DA	5/14/2013	2240	pCi/L
WELL AC-Grab	2/11/2013	304000	pCi/L	WELL DA	6/20/2013	2030	pCi/L
WELL AC-LF	2/11/2013	578000	pCi/L	WELL DA	7/12/2013	2140	pCi/L
WELL AC-Grab	2/20/2013	474000	pCi/L	WELL DA	8/16/2013	2040	pCi/L
WELL AC-LF	2/20/2013	485000	pCi/L	WELL DA	9/20/2013	1750	pCi/L

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Investigation and Monitoring Wells: Tritium Results							
Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AC-3 VOL	2/20/2013	458000	pCi/L	WELL DA	10/7/2013	1980	pCi/L
WELL AC-Grab	3/11/2013	72200	pCi/L	WELL DA	11/12/2013	1510	pCi/L
WELL AC-LF	3/11/2013	510000	pCi/L	WELL DA	12/18/2013	1750	pCi/L
WELL AC-Grab	3/18/2013	198000	pCi/L	WELL DB	1/29/2013	7700	pCi/L
WELL AC-LF	3/19/2013	393000	pCi/L	WELL DB	2/14/2013	10300	pCi/L
WELL AC-EP	3/27/2013	185000	pCi/L	WELL DB	3/14/2013	10700	pCi/L
WELL AC-TV	3/27/2013	399000	pCi/L	WELL DB	4/10/2013	12300	pCi/L
WELL AC-LF	4/8/2013	301000	pCi/L	WELL DB	5/15/2013	12400	pCi/L
WELL AC	5/17/2013	637000	pCi/L	WELL DB	6/20/2013	12900	pCi/L
WELL AC	6/26/2013	109000	pCi/L	WELL DB	7/12/2013	12700	pCi/L
WELL AC	7/12/2013	137000	pCi/L	WELL DB	8/16/2013	11100	pCi/L
WELL AC	8/16/2013	145000	pCi/L	WELL DB	9/20/2013	9170	pCi/L
WELL AC	9/20/2013	471000	pCi/L	WELL DB	10/9/2013	8860	pCi/L
WELL AC	10/9/2013	528000	pCi/L	WELL DB	11/15/2013	6370	pCi/L
WELL AC	11/15/2013	436000	pCi/L	WELL DB	12/12/2013	8150	pCi/L
WELL AC	12/18/2013	177000	pCi/L	WELL DC	1/22/2013	1190	pCi/L
WELL AD	1/18/2013	6310	pCi/L	WELL DC	2/14/2013	2020	pCi/L
WELL AD	2/15/2013	2770	pCi/L	WELL DC	3/14/2013	2400	pCi/L
WELL AD	3/18/2013	716	pCi/L	WELL DC	4/10/2013	1540	pCi/L
WELL AD	7/15/2013	2030	pCi/L	WELL DC	5/15/2013	1370	pCi/L
WELL AD	8/20/2013	7710	pCi/L	WELL DC	6/20/2013	1610	pCi/L
WELL AD	9/19/2013	8610	pCi/L	WELL DC	7/12/2013	2040	pCi/L
WELL AD	10/10/2013	< 193	pCi/L	WELL DC	8/16/2013	2410	pCi/L
WELL AD	11/25/2013	20900	pCi/L	WELL DC	9/20/2013	2060	pCi/L
WELL AD	12/19/2013	19800	pCi/L	WELL DC	10/9/2013	2230	pCi/L
WELL AE	1/21/2013	13700	pCi/L	WELL DC	11/15/2013	1630	pCi/L
WELL AE	2/15/2013	14700	pCi/L	WELL DC	12/12/2013	984	pCi/L
WELL AE	3/15/2013	18400	pCi/L	WELL DD	1/22/2013	18200	pCi/L
WELL AE	4/8/2013	17700	pCi/L	WELL DD	2/13/2013	16800	pCi/L
WELL AE	5/15/2013	13500	pCi/L	WELL DD	3/14/2013	16400	pCi/L
WELL AE	6/27/2013	13300	pCi/L	WELL DD	4/10/2013	10900	pCi/L
WELL AE	7/10/2013	12600	pCi/L	WELL DD	5/15/2013	9300	pCi/L
WELL AE	8/14/2013	8460	pCi/L	WELL DD	6/20/2013	6270	pCi/L
WELL AE	9/17/2013	8740	pCi/L	WELL DD	7/12/2013	7460	pCi/L
WELL AE	10/9/2013	8810	pCi/L	WELL DD	8/16/2013	7710	pCi/L
WELL AE	11/14/2013	6300	pCi/L	WELL DD	9/20/2013	7790	pCi/L
WELL AE	12/13/2013	6790	pCi/L	WELL DD	10/9/2013	9210	pCi/L
WELL AF	1/17/2013	< 169	pCi/L	WELL DD	11/15/2013	7700	pCi/L

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Investigation and Monitoring Wells: Tritium Results							
Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AF	3/22/2013	< 162	pCi/L	WELL DD	12/12/2013	7280	pCi/L
WELL AF	4/9/2013	< 185	pCi/L	WELL DE	1/29/2013	9280	pCi/L
WELL AF	7/11/2013	< 197	pCi/L	WELL DE	2/14/2013	9460	pCi/L
WELL AF	10/9/2013	< 194	pCi/L	WELL DE	3/14/2013	9030	pCi/L
WELL AGD	1/18/2013	1230	pCi/L	WELL DE	4/10/2013	8630	pCi/L
WELL AGD	3/24/2013	891	pCi/L	WELL DE	5/15/2013	7960	pCi/L
WELL AGD	4/9/2013	910	pCi/L	WELL DE	6/20/2013	8620	pCi/L
WELL AGD	5/16/2013	691	pCi/L	WELL DE	7/12/2013	9290	pCi/L
WELL AGD	6/24/2013	784	pCi/L	WELL DE	8/16/2013	8300	pCi/L
WELL AGD	7/10/2013	1020	pCi/L	WELL DE	9/20/2013	9520	pCi/L
WELL AGD	8/14/2013	914	pCi/L	WELL DE	10/9/2013	9110	pCi/L
WELL AGD	9/17/2013	1100	pCi/L	WELL DE	11/15/2013	8880	pCi/L
WELL AGD	10/8/2013	864	pCi/L	WELL DE	12/12/2013	7040	pCi/L
WELL AGD	11/13/2013	838	pCi/L	WELL DF	1/29/2013	1800	pCi/L
WELL AGD	12/13/2013	896	pCi/L	WELL DF	2/14/2013	1940	pCi/L
WELL AGS	1/18/2013	922	pCi/L	WELL DF	3/14/2013	2060	pCi/L
WELL AGS	2/15/2013	1180	pCi/L	WELL DF	4/10/2013	2250	pCi/L
WELL AGS	3/20/2013	1540	pCi/L	WELL DF	5/15/2013	2050	pCi/L
WELL AGS	4/9/2013	1430	pCi/L	WELL DF	6/20/2013	1690	pCi/L
WELL AGS	5/16/2013	1000	pCi/L	WELL DF	7/12/2013	1800	pCi/L
WELL AGS	6/24/2013	1280	pCi/L	WELL DF	8/16/2013	1820	pCi/L
WELL AGS	7/10/2013	1340	pCi/L	WELL DF	9/20/2013	1720	pCi/L
WELL AGS	8/14/2013	800	pCi/L	WELL DF	10/9/2013	1740	pCi/L
WELL AGS	9/17/2013	968	pCi/L	WELL DF	11/15/2013	1570	pCi/L
WELL AGS	10/8/2013	831	pCi/L	WELL DF	12/12/2013	1910	pCi/L
WELL AGS	11/13/2013	912	pCi/L	WELL DG	1/16/2013	8310	pCi/L
WELL AGS	12/13/2013	761	pCi/L	WELL DG	2/15/2013	9630	pCi/L
WELL AHD	1/21/2013	739	pCi/L	WELL DG	3/13/2013	7990	pCi/L
WELL AHD	2/15/2013	1030	pCi/L	WELL DG	4/10/2013	7340	pCi/L
WELL AHD	3/19/2013	682	pCi/L	WELL DG	5/14/2013	6740	pCi/L
WELL AHD	4/9/2013	390	pCi/L	WELL DG	6/24/2013	5460	pCi/L
WELL AHD	5/17/2013	459	pCi/L	WELL DG	7/9/2013	6360	pCi/L
WELL AHD	6/24/2013	763	pCi/L	WELL DG	8/15/2013	4850	pCi/L
WELL AHD	7/16/2013	721	pCi/L	WELL DG	9/17/2013	4700	pCi/L
WELL AHD	8/20/2013	572	pCi/L	WELL DG	10/7/2013	5300	pCi/L
WELL AHD	9/19/2013	662	pCi/L	WELL DG	11/12/2013	4770	pCi/L
WELL AHD	10/9/2013	452	pCi/L	WELL DG	12/11/2013	2000	pCi/L
WELL AHD	11/13/2013	359	pCi/L	WELL DH	1/16/2013	5910	pCi/L

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Investigation and Monitoring Wells: Tritium Results							
Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AHD	12/20/2013	316	pCi/L	WELL DH	2/13/2013	6010	pCi/L
WELL AHS	1/21/2013	996	pCi/L	WELL DH	3/14/2013	6130	pCi/L
WELL AHS	2/15/2013	1500	pCi/L	WELL DH	4/10/2013	5790	pCi/L
WELL AHS	3/19/2013	1360	pCi/L	WELL DH	5/14/2013	7010	pCi/L
WELL AHS	4/9/2013	372	pCi/L	WELL DH	6/26/2013	6460	pCi/L
WELL AHS	5/17/2013	649	pCi/L	WELL DH	7/10/2013	7280	pCi/L
WELL AHS	6/24/2013	568	pCi/L	WELL DH	8/14/2013	7680	pCi/L
WELL AHS	7/16/2013	398	pCi/L	WELL DH	9/17/2013	6100	pCi/L
WELL AHS	8/20/2013	369	pCi/L	WELL DH	10/8/2013	6420	pCi/L
WELL AHS	9/19/2013	343	pCi/L	WELL DH	11/14/2013	6210	pCi/L
WELL AHS	10/9/2013	303	pCi/L	WELL DH	12/11/2013	6170	pCi/L
WELL AHS	11/13/2013	434	pCi/L	WELL DI	1/16/2013	2670	pCi/L
WELL AHS	12/20/2013	553	pCi/L	WELL DI	2/13/2013	2200	pCi/L
WELL AI	1/15/2013	1930	pCi/L	WELL DI	3/14/2013	2550	pCi/L
WELL AI	2/14/2013	1400	pCi/L	WELL DI	4/10/2013	3140	pCi/L
WELL AI	3/15/2013	1180	pCi/L	WELL DI	5/14/2013	3310	pCi/L
WELL AI	7/11/2013	2100	pCi/L	WELL DI	6/26/2013	2030	pCi/L
WELL AI	8/19/2013	841	pCi/L	WELL DI	7/10/2013	2430	pCi/L
WELL AI	9/17/2013	2130	pCi/L	WELL DI	8/14/2013	1380	pCi/L
WELL AI	10/9/2013	2340	pCi/L	WELL DI	9/17/2013	1880	pCi/L
WELL AI	11/15/2013	2180	pCi/L	WELL DI	10/8/2013	2040	pCi/L
WELL AI	12/19/2013	2430	pCi/L	WELL DI	11/14/2013	1700	pCi/L
WELL AJ	1/18/2013	23400	pCi/L	WELL DI	12/11/2013	1770	pCi/L
WELL AJ	2/15/2013	21800	pCi/L	WELL DJ	1/16/2013	701	pCi/L
WELL AJ	3/21/2013	25800	pCi/L	WELL DJ	2/13/2013	755	pCi/L
WELL AJ	4/11/2013	24800	pCi/L	WELL DJ	3/14/2013	922	pCi/L
WELL AJ	6/27/2013	16000	pCi/L	WELL DJ	4/10/2013	1060	pCi/L
WELL AJ	7/16/2013	20800	pCi/L	WELL DJ	5/14/2013	847	pCi/L
WELL AJ	8/21/2013	19600	pCi/L	WELL DJ	6/26/2013	792	pCi/L
WELL AJ	9/23/2013	19500	pCi/L	WELL DJ	7/10/2013	734	pCi/L
WELL AJ	10/8/2013	22700	pCi/L	WELL DJ	8/14/2013	913	pCi/L
WELL AJ	11/25/2013	21300	pCi/L	WELL DJ	9/17/2013	927	pCi/L
WELL AJ	12/19/2013	16900	pCi/L	WELL DJ	10/8/2013	764	pCi/L
WELL AM	1/14/2013	7100	pCi/L	WELL DJ	11/14/2013	756	pCi/L
WELL AM	2/14/2013	6890	pCi/L	WELL DJ	12/11/2013	840	pCi/L
WELL AM	3/19/2013	5920	pCi/L	WELL EOW 2L *	1/16/2013	< 196	pCi/L
WELL AM	4/8/2013	6060	pCi/L	WELL EOW 2U *	1/16/2013	< 197	pCi/L
WELL AM	5/17/2013	7630	pCi/L	WELL EOW 5L *	1/16/2013	< 173	pCi/L

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Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AM	6/26/2013	7300	pCi/L	WELL EOW 5U	1/16/2013	< 198	pCi/L
WELL AM	7/12/2013	7660	pCi/L	WELL EOW 6L *	1/16/2013	< 190	pCi/L
WELL AM	8/16/2013	6230	pCi/L	WELL EOW 6U *	1/16/2013	< 194	pCi/L
WELL AM	9/20/2013	5280	pCi/L	WELL EOW-10L *	1/15/2013	< 185	pCi/L
WELL AM	10/9/2013	5360	pCi/L	WELL EOW-10U *	1/15/2013	< 184	pCi/L
WELL AM	11/15/2013	5300	pCi/L	WELL EOW-1L *	1/14/2013	< 181	pCi/L
WELL AM	12/18/2013	12200	pCi/L	WELL EOW-1U *	1/14/2013	< 182	pCi/L
WELL AN	1/17/2013	3570	pCi/L	WELL EOW-4L *	1/14/2013	< 184	pCi/L
WELL AN	2/15/2013	14500	pCi/L	WELL EOW-4U *	1/14/2013	< 184	pCi/L
WELL AN	3/21/2013	17100	pCi/L	WELL EOW-8L *	1/15/2013	< 187	pCi/L
WELL AN	4/11/2013	15800	pCi/L	WELL EOW-8U *	1/15/2013	< 181	pCi/L
WELL AN	8/21/2013	13200	pCi/L	WELL EOW-9L *	1/14/2013	< 184	pCi/L
WELL AN	9/23/2013	13400	pCi/L	WELL EOW-9U *	1/14/2013	< 184	pCi/L
WELL AN	10/8/2013	15800	pCi/L	WELL K	1/16/2013	< 173	pCi/L
WELL AN	11/25/2013	16800	pCi/L	WELL K	7/10/2013	< 185	pCi/L
WELL AN	12/19/2013	14400	pCi/L	WELL L	1/21/2013	< 196	pCi/L
WELL AO	1/17/2013	2500	pCi/L	WELL L	7/11/2013	< 195	pCi/L
WELL AO	2/14/2013	3450	pCi/L	WELL M	1/15/2013	8220	pCi/L
WELL AO	3/19/2013	3380	pCi/L	WELL M	2/12/2013	8670	pCi/L
WELL AP	1/16/2013	706	pCi/L	WELL M	3/14/2013	6630	pCi/L
WELL AP	2/14/2013	796	pCi/L	WELL M	4/9/2013	5530	pCi/L
WELL AP	3/18/2013	801	pCi/L	WELL M	5/16/2013	5760	pCi/L
WELL AP	4/9/2013	780	pCi/L	WELL M	6/26/2013	6620	pCi/L
WELL AP	5/17/2013	891	pCi/L	WELL M	7/11/2013	5200	pCi/L
WELL AP	6/27/2013	847	pCi/L	WELL M	8/19/2013	4920	pCi/L
WELL AP	7/9/2013	833	pCi/L	WELL M	9/18/2013	6410	pCi/L
WELL AP	8/19/2013	715	pCi/L	WELL M	10/9/2013	5360	pCi/L
WELL AP	9/18/2013	870	pCi/L	WELL M	11/12/2013	5600	pCi/L
WELL AP	10/8/2013	815	pCi/L	WELL M	12/18/2013	4540	pCi/L
WELL AP	11/20/2013	665	pCi/L	WELL N	1/14/2013	19200	pCi/L
WELL AP	12/19/2013	846	pCi/L	WELL N	2/14/2013	17900	pCi/L
WELL AR	1/17/2013	9250	pCi/L	WELL N	3/11/2013	19700	pCi/L
WELL AR	2/14/2013	12300	pCi/L	WELL N	4/8/2013	16500	pCi/L
WELL AR	3/18/2013	11200	pCi/L	WELL N	5/17/2013	16300	pCi/L
WELL AR	4/9/2013	10600	pCi/L	WELL N	6/26/2013	18500	pCi/L
WELL AR	5/17/2013	8330	pCi/L	WELL N	7/12/2013	19000	pCi/L
WELL AR	6/27/2013	7160	pCi/L	WELL N	8/16/2013	21300	pCi/L
WELL AR	7/15/2013	7300	pCi/L	WELL N	9/20/2013	17500	pCi/L

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Well	Date	Activity	Units	Well	Date	Activity	Units
WELL AR	8/20/2013	6030	pCi/L	WELL N	10/9/2013	16400	pCi/L
WELL AR	9/23/2013	6170	pCi/L	WELL N	11/15/2013	15500	pCi/L
WELL AR	10/10/2013	6070	pCi/L	WELL N	12/18/2013	10700	pCi/L
WELL AR	11/20/2013	5570	pCi/L	WELL NOW 1L *	1/17/2013	< 193	pCi/L
WELL AR	12/17/2013	6020	pCi/L	WELL NOW 1U *	1/17/2013	< 199	pCi/L
WELL AS	1/18/2013	16700	pCi/L	WELL NOW 2U *	1/16/2013	< 181	pCi/L
WELL AS	2/15/2013	20800	pCi/L	WELL NOW 5L *	1/17/2013	< 193	pCi/L
WELL AS	3/18/2013	10300	pCi/L	WELL NOW 5U *	1/17/2013	< 197	pCi/L
WELL AS	4/9/2013	14700	pCi/L	WELL NOW 7L *	1/15/2013	< 189	pCi/L
WELL AS	5/17/2013	13900	pCi/L	WELL NOW 7U *	1/15/2013	< 193	pCi/L
WELL AS	6/27/2013	8180	pCi/L	WELL NOW 8L *	1/15/2013	< 196	pCi/L
WELL AS	7/15/2013	5140	pCi/L	WELL NOW 8U *	1/15/2013	< 193	pCi/L
WELL AS	8/16/2013	8080	pCi/L	WELL O	1/21/2013	30400	pCi/L
WELL AS	9/19/2013	13400	pCi/L	WELL O	2/15/2013	48400	pCi/L
WELL AS	10/10/2013	7860	pCi/L	WELL O	3/15/2013	28400	pCi/L
WELL AS	11/19/2013	16000	pCi/L	WELL O	4/8/2013	23200	pCi/L
WELL AS	12/13/2013	1680	pCi/L	WELL O	5/15/2013	17000	pCi/L
WELL AT	1/18/2013	3700	pCi/L	WELL O	6/27/2013	12500	pCi/L
WELL AT	2/15/2013	3370	pCi/L	WELL O	7/10/2013	9910	pCi/L
WELL AT	3/13/2013	3560	pCi/L	WELL O	8/14/2013	6670	pCi/L
WELL AT	4/11/2013	2560	pCi/L	WELL O	9/17/2013	5360	pCi/L
WELL AT	5/20/2013	3030	pCi/L	WELL O	10/9/2013	8350	pCi/L
WELL AT	6/27/2013	2630	pCi/L	WELL O	11/14/2013	10200	pCi/L
WELL AT	7/16/2013	2680	pCi/L	WELL O	12/13/2013	67600	pCi/L
WELL AT	8/21/2013	2460	pCi/L	WELL P	1/18/2013	< 168	pCi/L
WELL AT	9/23/2013	2220	pCi/L	WELL P	7/11/2013	< 193	pCi/L
WELL AT	10/8/2013	2150	pCi/L	WELL Q	1/18/2013	< 172	pCi/L
WELL AT	11/25/2013	1780	pCi/L	WELL Q	7/15/2013	< 188	pCi/L
WELL AT	12/19/2013	1530	pCi/L	WELL R	1/15/2013	4710	pCi/L
WELL BW	2/13/2013	714	pCi/L	WELL R	2/12/2013	3320	pCi/L
WELL BW	5/16/2013	522	pCi/L	WELL R	3/14/2013	2920	pCi/L
WELL BW	8/15/2013	612	pCi/L	WELL R	4/9/2013	3010	pCi/L
WELL BW	12/12/2013	535	pCi/L	WELL R	5/16/2013	3250	pCi/L
WELL BX	1/17/2013	609	pCi/L	WELL R	6/26/2013	3210	pCi/L
WELL BX	2/13/2013	382	pCi/L	WELL R	7/16/2013	3310	pCi/L
WELL BX	3/15/2013	776	pCi/L	WELL R	8/19/2013	2990	pCi/L
WELL BX	4/11/2013	1140	pCi/L	WELL R	9/18/2013	3240	pCi/L
WELL BX	5/16/2013	496	pCi/L	WELL R	10/9/2013	2870	pCi/L

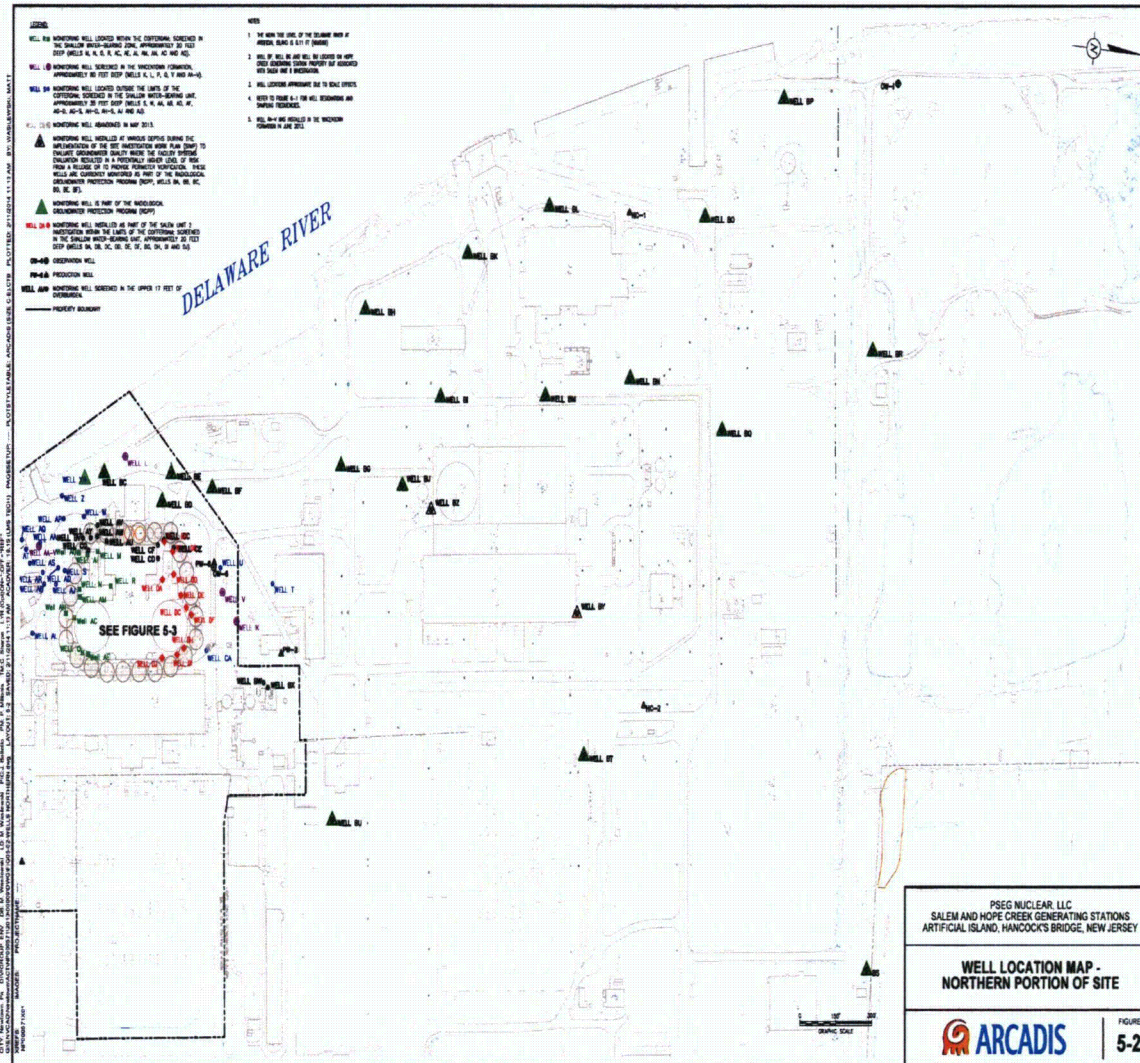
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Investigation and Monitoring Wells: Tritium Results							
Well	Date	Activity	Units	Well	Date	Activity	Units
WELL BX	8/15/2013	1350	pCi/L	WELL R	11/12/2013	2940	pCi/L
WELL BX	9/18/2013	1020	pCi/L	WELL R	12/17/2013	2880	pCi/L
WELL BX	10/8/2013	917	pCi/L	WELL S	1/18/2013	16600	pCi/L
WELL BX	11/14/2013	586	pCi/L	WELL S	2/15/2013	17100	pCi/L
WELL BX	12/12/2013	806	pCi/L	WELL S	3/21/2013	17900	pCi/L
WELL BY	1/15/2013	1880	pCi/L	WELL S	6/27/2013	13400	pCi/L
WELL BY	2/13/2013	4470	pCi/L	WELL S	7/16/2013	10900	pCi/L
WELL BY	2/19/2013	2310	pCi/L	WELL S	8/21/2013	16100	pCi/L
WELL BY	3/15/2013	3250	pCi/L	WELL S	11/25/2013	21300	pCi/L
WELL BY	4/11/2013	1150	pCi/L	WELL S	12/19/2013	21400	pCi/L
WELL BY	5/13/2013	1490	pCi/L				
WELL BY	6/21/2013	1520	pCi/L				
WELL BY	7/8/2013	1260	pCi/L				
WELL BY	8/13/2013	1460	pCi/L				
WELL BY	9/16/2013	1310	pCi/L				
WELL BY	10/7/2013	1170	pCi/L				
WELL BY	11/12/2013	1160	pCi/L				
WELL BY	12/10/2013	1240	pCi/L				

- Early Site Permit Wells

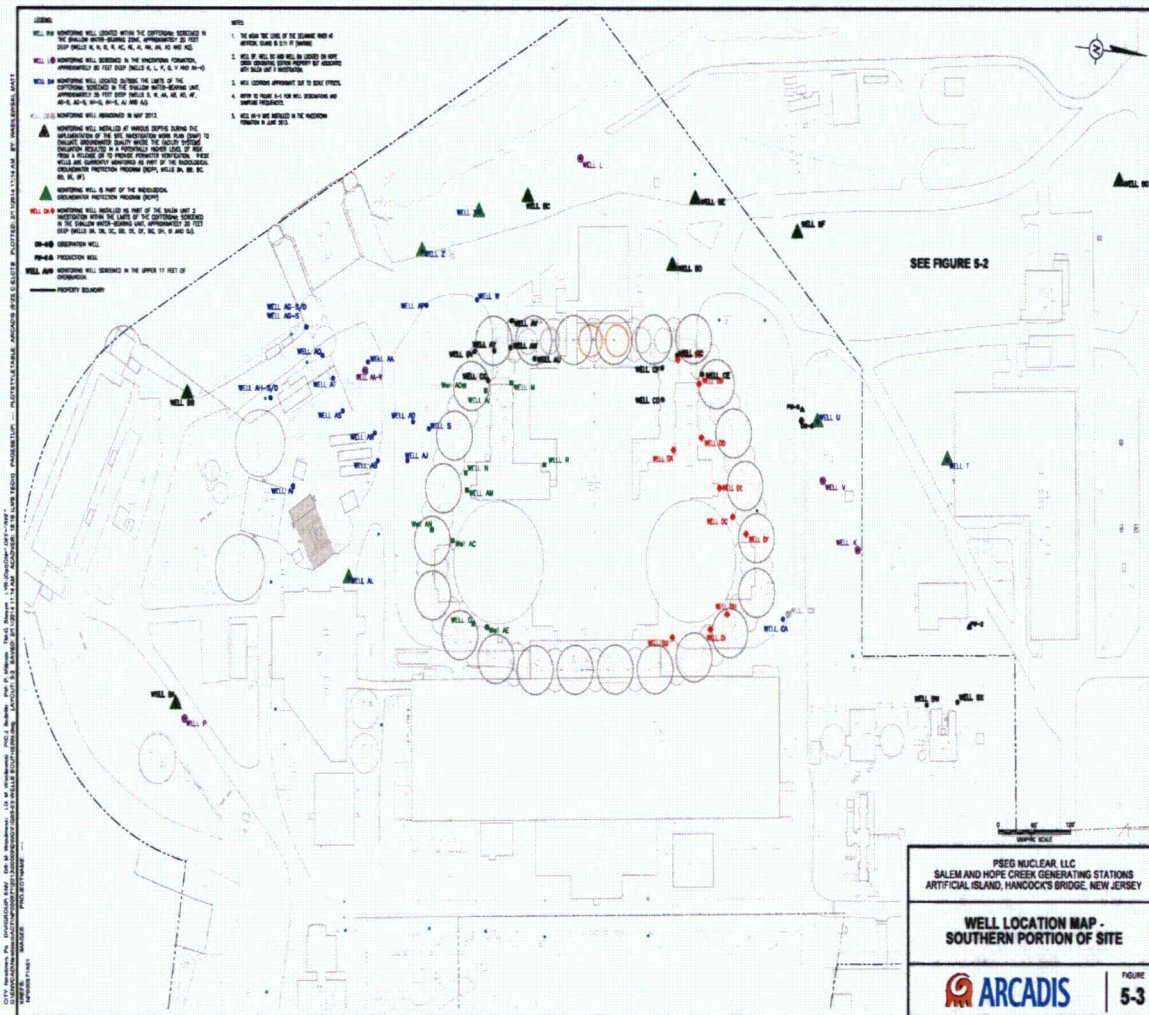
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Figure 1 – Hope Creek RGPP Monitoring Wells



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Figure 2 – Salem RGPP Monitoring Wells



HOPE CREEK AND SALEM 10CFR 50.75(G) DATA

Spill/Discharge	Quantity Spilled / Discharged	Location of Spill/Discharge	Description
Apr-95	~ 88 millicuries	Hope Creek and Salem	Steam from the Decon Solution Evaporator released from Hope Creek's South Plant Vent
Sep-02	~5 Ci	Ground west of Salem Unit 1 Spent Fuel Building	Blockage of the Spent Fuel Pool liner's "tell-tales" caused backup of contaminated water through building seams
Mar-04	Co-60	North Side of Salem Circulating Water House	Corroded Pipe Cracked
Aug-06		Southside of Salem House Heating Boiler	Leaking Valve
May-07	2.8 microcuries of Cs 137	In front of Salem Unit 2 condensate polisher	Burst site glass during operation. Resin blown through wall into switchyard
Nov-10	0.3 microcuries of Cs 137	At the pedestal steps Salem Unit 2 containment	Attributed to Fallout

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