



Technical Specification Section 6.9.1.8 (Salem)
Technical Specification Section 6.9.1.7 (Hope Creek)

LR-N16-0053

APR 28 2016

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Hope Creek Generating Station
Renewed Facility Operating License NPF-57
NRC Docket No. 50 354

Salem Nuclear Generating Station, Unit Nos. 1 and 2
Renewed Facility Operating Licenses Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Subject: 2015 Annual Radioactive Effluent Release Report

In accordance with Section 6.9.1.7 of Appendix A to Operating License NPF-57 for Hope Creek Generating Station (HCGS), and Section 6.9.1.8 of Appendix A to Operating Licenses DPR-70 and DPR-75 for Salem Generating Station Unit Nos. 1 and 2 (Salem), PSEG Nuclear hereby transmits one copy of the combined 2015 Annual Radioactive Effluent Release Report (Enclosure). The report is RERR-38 for HCGS and RERR-64 for Salem. This report summarizes liquid and gaseous releases and solid waste shipments from the HCGS and Salem for the period of January 1, 2015, to December 31, 2015.

There are no regulatory commitments contained in this letter.

IE48
NRR

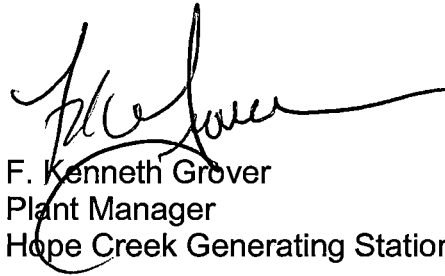
LR-N16-0053
Page 2

If you have any questions or comments on this transmittal, please contact Ms. Alison Kraus at (856) 339-7900.

Sincerely,



Eric S. Carr
Plant Manager
Salem Generating Station



F. Kenneth Grover
Plant Manager
Hope Creek Generating Station

pjd

Enclosure: 2015 Annual Radioactive Effluent Release Report

cc: Mr. Daniel Dorman, Regional Administrator - Region 1
Nuclear Regulatory Commission
Mr. Thomas Wengert, Project Manager Hope Creek/Salem USNRC
Mr. Justin Hawkins, NRC Senior Resident Inspector - Hope Creek (X24)
Mr. Patrick Finney, NRC Senior Resident Inspector - Salem (X24)
Mr. Thomas MacEwen, Hope Creek Commitment Coordinator (H02)
Mr. Thomas Cachaza, Salem Commitment Coordinator (X25)
Mr. Lee Marabella, Corporate Commitment Coordinator (N21)

Technical Specification Section 6.9.1.8 (Salem)
Technical Specification Section 6.9.1.7 (Hope Creek)

LR-N16-0053

Enclosure

Salem and Hope Creek Generating Stations

2015 Annual

Radioactive Effluent Release Report

PSEG NUCLEAR LLC
2015 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
For
The Salem and Hope Creek
Generating Stations

SGS RERR-64
DOCKET NO. 50-272
DOCKET NO. 50-311
OPERATING LICENSE NO. DPR-070
OPERATING LICENSE NO. DPR-075

HCGS RERR-38
DOCKET NO. 50-354
OPERATING LICENSE NO. NPF-057

April 2016

Page Intentionally Left Blank

Table of Contents

I	Introduction.....	1
II	Supplemental Information.....	2
1.	Regulatory Limits	2
2.	Maximum Permissible Concentration (MPC) Limits	3
3.	Average Energy	3
4.	Measurements and Approximations of Total Radioactivity	3
a.	Liquid Effluents	3
b.	Gaseous Effluents	4
5.	Estimated Total Error	6
6.	Unplanned Releases.....	7
7.	Significant Events	8
8.	Changes to the Offsite Dose Calculation Manual	10
9.	Changes to the Process Control Program	10
10.	Radioactive Effluent Monitoring Instrumentation Out of Service for More than 30 Days.....	10
11.	Elevated Gaseous Radiation Monitor Responses.....	11
12.	Independent Spent Fuel Storage Installation (ISFSI).....	12
13.	Effluent Trends	12
14.	Modification to Previous Radioactive Effluent Release Reports –Errata Data Section	15
15.	Carbon-14 in Gaseous Effluents.....	17
III	Radiological Impact On Man.....	18
1.	Effluent Doses	18
a.	Doses from Liquid Effluent	18
b.	Doses from Gaseous Effluent.....	20
2.	Total Dose Resulting from Radioactive Effluent Releases and Radiation from Uranium Fuel Cycle Sources.....	27
3.	Dose to Members of the Public Due to Activities inside the Site Boundary	28
	APPENDIX A-1, Effluent & Waste Disposal Summary, Salem Unit 1.....	29
	APPENDIX A-2, Effluent & Waste Disposal Summary, Salem Unit 2.....	39

APPENDIX A-3, Effluent & Waste Disposal Summary, Hope Creek Unit 1.....	53
APPENDIX B, Meteorological Data	69
APPENDIX C, Maximum Permissible Concentration (MPC) Data	121
APPENDIX D, 2015 Radiological Groundwater Protection Program (RGPP) Report.....	129

List of Tables

Table 1	Quarterly and Annual Child Bone Doses from Radioactive Gaseous Effluent Releases from the Site to the Critical Receptor and Pathways, 2015	18
Table 2	2015 Doses and Percent of the Limits from Liquid Effluents by Operating Unit.....	19
Table 3	2015 Doses and Percent of the Limits from Gaseous Effluents by	20

Table 4	2015 Annual Average Undepleted X/Q, Depleted X/Q and D/Q and Active Exposure Pathways.....	23
Table 5	2015 Total Body and Critical Organ Doses at Real Receptor Locations Using the Annual Meteorological Dispersion and Deposition Data with Gaseous Effluent Releases from Each Generating Station.....	25
Table 6	2015 Total Body and Organ Dose due to Liquid and Gaseous Effluents and Direct Shine ISFSI Dose	27

List of Figures

Figure 1	Fission and Activation Gases Released in Gaseous Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 – 2015	12
Figure 2	Iodines Released in Gaseous Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 - 2015	13
Figure 3	Particulates Released in Gaseous Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 - 2015	13
Figure 4	Tritium Released in Gaseous Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 - 2015	14
Figure 5	Fission and Activation Products Released in Liquid Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 – 2015	14
Figure 6	Tritium Released in Liquid Effluents, Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 – 2015	15
Figure 7	Locations of Dose Calculation Receptors with 2015 Wind Rose Overlay	24

Page Intentionally Left Blank

I. Introduction

This report, SGS-RERR-64/HCGS-RERR-38, 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, 2015, to December 31, 2015.

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 began 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 1178 MWe. Salem Unit 2 achieved initial criticality on August 2, 1980, and began 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 1212 MWe. The HCGS achieved initial criticality on June 28, 1986 and began commercial operation on December 20, 1986.

The electrical energy (gross) output for 2015 was as follows:

Unit	MW·h electrical (net)
Salem Unit 1	9,778,025
Salem Unit 2	8,892,067
Hope Creek Unit 1	9,450,738

This report complies with the format described in Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants", Revision 1, June, 1974, 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.

Meteorological data was reported in the format specified in Regulatory Guide 1.23, Revision 1, "Meteorological Monitoring Programs for Nuclear Power Plants."

All vendor results were received and included in the report calculations. Therefore the 2015 report is complete.

II. Supplemental Information

1. Regulatory Limits

The regulatory limits for Salem Unit 1, Salem Unit 2 and Hope Creek Unit 1 were the same. The limits were as follows:

		Limit	Units	Receptor	ODCM and 10 CFR 50, Appendix I Design Objective Limits
1. Noble Gases:					
	a.	≤ 500	mrem/Yr	Total Body	ODCM Control 3.11.2.1.a
		≤ 3000	mrem/Yr	Skin	
	b.	≤ 5	mRad	Air Gamma	Quarterly air dose limits
		≤ 10	mRad	Air Beta	ODCM Control 3.11.2.2.a
	c.	≤ 10	mRad	Air Gamma	Yearly air dose limits
		≤ 20	mRad	Air Beta	ODCM Control 3.11.2.2.b
	d.	≤ 10	mrem	Total Body (Gamma)	10 CFR 50, Appendix I, Section II.B.2(b)
		≤ 30	mrem	Skin (Beta)	
2. Iodines, Tritium, Particulates with Half Life > 8 days:					
	a.	≤ 1500	mrem/Yr	Any Organ	ODCM Control 3.11.2.1.b
	b.	≤ 7.5	mrem	Any Organ	Quarterly dose limits
					ODCM Control 3.11.2.3.a
	c.	≤ 15	mrem	Any Organ	Yearly dose limits
					ODCM Control 3.11.2.3.b
3. Liquid Effluents					
	a.	The concentration limits in 10 CFR 20, Appendix B, Table II Col. 2 (pre 1994). For dissolved or entrained noble gases, the concentration shall be limited to 2 E-04 microcuries/ml.			ODCM Control 3.11.1.1
	b.	≤ 1.5	mrem	Total Body	Quarterly dose limits
		≤ 5	mrem	Any Organ	ODCM Control 3.11.1.2.a
	c.	≤ 3	mrem	Total Body	Yearly dose limits
		≤ 10	mrem	Any Organ	ODCM Control 3.11.1.2.b
4. Total Dose Limits					
		≤ 25	mrem	Total Body or Organ	Yearly dose limits
		≤ 75	mrem	Thyroid	ODCM Control 3.11.4, 40 CFR 190 and 10 CFR 72.104
		≤ 100	mrem	Site TEDE Dose	10 CFR 20.1301

2. Maximum Permissible Concentration (MPC) Limits

Gaseous dose rates rather than maximum permissible concentration limits were used to calculate permissible release rates for gaseous releases. The maximum permissible dose rates for gaseous releases were defined in ODCM Controls 3.11.2.1.a and 3.11.2.1.b as 500 mrem/yr (Total Body), 3000 mrem/yr (Skin) and 1500 mrem/yr (Organ).

The Maximum Permissible Concentration Limit specified in 10 CFR 20, Appendix B, Table II, Column 2 (pre 1994) for identified nuclides, were used to calculate permissible release rates and concentrations for liquid release in accordance with the Salem Unit 1 and Unit 2 and the Hope Creek Offsite Dose Calculation Manual Control 3.11.1.1. The total activity concentration for all dissolved or entrained gases was limited to $< 2\text{E-}04$ uCi/ml.

3. Average Energy

The Salem and Hope Creek ODCM limits the instantaneous dose equivalent rates due to the release of noble gases to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. The average beta and gamma energies of the radionuclide mixture in releases of fission and activation gases as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," may be used to calculate doses in lieu of more sophisticated software. The Salem and Hope Creek radioactive effluent programs employs the methodologies presented in U.S. NRC 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," Revision 1, October 1977 and NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978. Therefore, average energies were not applicable to Salem and Hope Creek.

4. Measurements and Approximations of Total Radioactivity

a. Liquid Effluents

Liquid effluents were 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 2015, all batch liquid wastes were routed to the sampling tanks for monitoring prior to release. The ODCMs require these tanks to be uniformly mixed for sampling and analysis before being released.

Batch releases were 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 were collected and disposed via the Chemical Waste Basin, and the Chemical Volume Control System (CVCS) Monitor Tanks. During 2015, 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 was cross-connected.

Continuous releases were 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 the Unit 1 Groundwater Recovery System through the Chemical Waste Basin.

Representative samples were obtained in accordance with Table 4.11-1 of the Salem ODCM for the Salem Generating Station and Table 4.11.1.1.1-1 of the Hope Creek ODCM for Hope Creek Generating Station. The total liquid activity discharged was 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. Radionuclides that were measured at concentrations below the ODCM-specified lower limit of detection (LLD) were considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

b. Gaseous Effluents

Salem Units 1 and 2:

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

Sampling was also performed on all gas decay tanks and the containment atmosphere prior to release to the environment. The plant vent for each unit was 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. A radionuclide detected at a concentration below the

ODCM LLD was considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

Continuous gaseous releases were quantified by routine sampling and isotopic analyses of the plant vent for each unit, as required by the ODCM. Specific activities for detected isotopes were 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 noble gas releases were 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 gas discharged in that batch release.

Elevated plant vent radiation monitoring system readings while the channel was in an alarm state were treated as batch mode releases. If specific activity data from grab samples were not available, then the release was quantified by the use of the plant vent radiation monitors. The monitor response was converted to "specific activity" using historical efficiency factors. The total activity discharged was 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 were 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) were the final release points for planned gaseous effluent releases. The NPV and SPV were continuously monitored for iodine, particulates and noble gases. These monitors have fixed particulate and charcoal filters. The particulate filters and charcoal cartridges were normally replaced and analyzed weekly. These analyses were performed on a multi-channel analyzer. The NPV and SPV were also normally sampled weekly for noble gases and tritium.

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

The detection requirements of Tables 4.11.2.1.2-1 of the ODCM were achieved or exceeded. A radionuclide detected at a concentration below the ODCM detection limit (LLD) was considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

Batch noble gas releases (i.e. primary containment purge) were 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.

The Salem and Hope Creek ODCMs required lower limit of detection for airborne and liquid releases were as follows:

Airborne:	LLD
Gross Alpha, Sr-89, Sr-90	1E-11 uCi/cc
H-3	1E-06 uCi/cc
I-131	1E-12 uCi/cc
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, Ce-144)	1E-11 uCi/cc
Noble Gas (Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-135m, Xe-138)	1E-04 uCi/cc

Liquid:	LLD
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141)	5E-07 uCi/ml
Ce-144 – Hope Creek	5E-06 uCi/ml
Ce-144 – Salem	2E-06 uCi/ml
I-131	1E-06 uCi/ml
Entrained Gases (Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-135m, Xe-138)	1E-05 uCi/ml
H-3	1E-05 uCi/ml
Gross Alpha	1E-07 uCi/ml
Sr-89, Sr-90	5E-08 uCi/ml
Fe-55	1E-06 uCi/ml

5. Estimated Total Error

The estimated total error reported for continuous and batch liquid releases for all three plants was within 27%. The estimated total error for continuous and batch gaseous releases, and solid waste was within 35%. These errors were primarily due to variability of waste stream flow rates and changes in isotopic distributions of waste streams between sampling periods.

6. Unplanned Releases

Salem Unit 1

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	2	1	3
Total Activity Released (Ci)	0	0	4.68E-03	1.93E-02	2.40E-02
2. Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	1	0	0	0	1
Total Activity Released (Ci)	1.70E-02	0	0	0	1.70E-02

There were three unplanned liquid releases due to an excavation project where liquid from the de-watering of an excavation was discharged to the river. Permits were created when positive activity was found. One gaseous release permit was created for a release through the Containment Equipment Hatch. Radiation Protection has established routine sampling in that area of the Containment Equipment Hatch. When activity was found, a permit was created using conservative flow rate assumptions.

Salem Unit 2:

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	0	0	0	0	0
2. Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	19	19
Total Activity Released (Ci)	0	0	0	1.11E-02	1.11E-02

There were zero unplanned liquid releases and one unplanned gaseous release due to the planned integrated leak rate test, and 18 unplanned gaseous releases through the Containment Equipment Hatch. Radiation Protection has established routine sampling of this hatch. When activity was found, permits were created using conservative flow rate assumptions.

Hope Creek Unit 1:

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	1	1	0	2
Total Activity Released (Ci)	0	1.20E-02	1.17E-05	0	1.20E-02
2. Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	0	0	0	0	0

There were two unplanned liquid releases and zero unplanned releases through the gaseous release pathways. The first unplanned liquid release was from the Service Water Drain Tank that occasionally contains small quantities of tritium. The second liquid release was from a South Yard Drain sample during a rain event (Notification 20697843). A conservative dose analysis was developed, and a nearby asphalt millings pile was identified as a potential source. All releases were documented in the Station's Effluent Management System (EMS) database program and the curies and doses calculated were included in the annual tables reported in this report.

7. Significant Events

Salem Unit 1

The required compensatory sampling frequency specified in ODCM CONTROL 3.3.3.8.b, ACTION 28.b. was not met. Radiation monitors 2R13A and 2R13B were declared out of service on 10/09/2015 at 1830. Compensatory sampling in accordance with ACTION 28.c "With no identified service water leakage (inside containment) on the Containment Fan Coil Unit associated with the inoperable monitor, at least once per 24 hours, collect grab samples and analyze for principal gamma emitters, I-131, and dissolved and entrained gases at the lower limits of detection specified in ODCM CONTROL Table 4.11-1.B and the ODCM Surveillance Requirement 4.11.1.1.2 was performed." Administrative sampling was initiated at a 12 hour frequency, which met the requirements of the Action.

Operations determined on 10/15/2015 that there had been service water leakage inside of containment associated with both radiation monitors. As a result, ACTION 28.b should have been invoked where sampling was required every eight hours. Chemistry immediately began sampling at an administrative rate of every six hours to meet the requirements of the Action.

No detectible activity was found in any of the samples. All samples results were below the Minimum Detectable Activity. – Notification 80114573

Salem Unit 2

None

Hope Creek

In accordance with NEI 07-07 "Industry Ground Water Protection Initiative-Final Guidance Document", on March 4, 2015 PSEG voluntarily notified the New Jersey Department of Environmental Protection Bureau of Nuclear Engineering, followed by the Nuclear Regulatory Commission, that tritium samples in excess of 10,000,000 pCi/L had been identified in ice and snow at the northeast corner of the Hope Creek Turbine Building. The ice and snow was removed and containment structures were put in place to collect any remaining water.

An Apparent Cause Evaluation (70174760) determined that the origin of the tritium source was the result of condensation and direct deposition from the discharge of entrained water vapor from the Turbine and Reactor Feed pump Lube Oil Vapor Extractors (TLOVE and RFPLOVE, respectively) and the two Generator Hydrogen Seal Oil vents (collectively, "Lube Oil Vents") onto the cooler surfaces of the Turbine Building roof, siding, and parapet walls. Although this condensation does occur year-round. This condensation and deposition process was approximately an order of magnitude more severe during seasonally cold weather. The average temperatures at the Site for January and February 2015 were 29.1 F and 23.7 F, respectively.

The Lube Oil Vents and associated systems were operating nominally as designed to remove accumulated water from the lubricating and seal oil for the various turbine systems. This water was discharged as entrained vapor onto the Turbine Building roof and condensed on lower temperature surfaces. This water includes tritium, as the source of a portion of the water in the turbine systems from the primary system. The Lube Oil Vent water vapor discharges accumulate in two ways: (1) direct condensation on cool surfaces (such as the parapet wall) and (2) direct deposition as rime ice (frost) on cold surfaces. The condensation and deposition mechanisms allow water to enter the roofing and siding / parapet wall systems. This water was not substantially diluted after it was discharged from the Lube Oil Vents (as cold air has low relative humidity) and it accumulated either in the roofing system, or in the siding / parapet wall systems (hollow and not sealed), where portions were displaced and dripped to the ground during or following precipitation events.

To obtain realistic effluent information for the Lube Oil System vent lines, Enercon Services, Inc. was tasked with determining various parameters of the vents discharging tritium to the atmosphere. That information was reported in Report NO. PSEG106-PR-004.

Applying the highest concentration of Reactor Coolant System (RCS) tritium recorded of 0.035 uCi/ml in 2014 it was determined that the gaseous tritium effluents from the individual Turbine Lube Oil vents each represented less than 1% of the total gaseous tritium released in 2014.

Items	Annual Release of Tritium, Ci/year	2014 Annual Gaseous Release of tritium, Ci	Percentage of Activity Relative to Total Release from Site
3 inch RFPT Vent Line	2.89	362.0	0.80%
3 inch GHSO Vent Line	0.39		0.11%
10 inch GHSO Vent Line	3.38		0.94%
8 inch MTLO vent Line	1.01		0.28%

The effluent water flow rates for each vent line calculated were significantly lower than the estimated values. Based on the calculated effluent water flow rates, the percentage of tritium activity for each of the Lube Oil System vent lines was less than 1 percent of the overall annual release of gaseous tritium from the Site.

Per Section 1.3 of Regulatory Guide 1.21, Rev.2, Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste, a significant release point was defined as any location, from which radioactive material was released, that contributes greater than 1 percent of the activity discharged from all the release points for a particular type of effluent considered. Based on this Regulatory Guide 1.21 criteria, the Lube Oil System vent lines were not significant release points.

In 2015 the total tritium released in gaseous effluents was 201 Ci. Using the average tritium concentration in Hope Creek RCS of 0.016 uCi/ml. The calculated release from these vents remain less than 1% of the total gaseous releases from Hope Creek. Therefore per Regulatory Guide 1.21 these minor systems do not require routine monitoring.

Items	Annual Release of Tritium, Ci/year	2015 Annual Gaseous Release of tritium, Ci	Percentage of Activity Relative to Total Release from Site
3 inch RFPT Vent Line	1.33	201.0	0.66%
3 inch GHSO Vent Line	0.18		0.09%
10 inch GHSO Vent Line	1.56		0.77%
8 inch MTLO vent Line	0.46		0.23%

8. Changes to the Offsite Dose Calculation Manuals

There were no changes to either the Salem or Hope Creek ODCMs.

9. Changes to the Process Control Program

Procedure RW-AA-100 was revised on May 12, 2015 to update the responsibilities in sections 3.1 and 3.2.

10. Radioactive Effluent Monitoring Instrumentation Out of Service for More than 30 Days

Salem Unit 1

Radiation monitors 1R19B and 1R19D were out of service for 35 days, 5 hours and 48 minutes.

Gaseous effluent radiation monitor 1R19A, B and D channels were removed from service on 1/13/2015 at 0850 for planned maintenance. On 1/14/2015 at 1930 1R19C was removed for service. Radiation monitors 1R19A and 1R19C were returned to service on 1/19/2015 at 1502. Scheduled maintenance of 1R19B and 1R19D completed on 2/17/2015 at 1315 and were returned to service on 2/17/2015 at 1438 after passing source check. These monitors were not returned to service within the required 30 days due to the unavailability of the required parts – Notification 20678634.

The required compensatory ACTIONS were implemented.

Salem Unit 2

None

Hope Creek Unit 1

A sensor calibration of the Filtration, Recirculation and Ventilation System (FRVS) vent flow sensor was started on July 8, 2015 at 0837, but was not completed until after the 30 day requirement had been exceeded. The primary reason that the sensor calibration was not completed within 30 days was due to the lack of communication which led to incorrect prioritization of the work.

TSAS 15-215, which identified the requirement for a special report, documented notification to Radiation Protection for compensatory actions on July 8th. Notification to Regulatory Assurance, Nuclear Environmental Affairs, or Work Management was not documented. In addition, reporting inoperability for more than 30 days in the next RERR was not documented in the notification long text as a consequence, and was not included in the operability screening of Notification 20696893. Documentation of this issue was in Notification 20699001.

11. Elevated Gaseous Radiation Monitor Responses

During the 2015 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.

12. Independent Spent Fuel Storage Installation (ISFSI)

An Independent Spent Fuel Storage Installation (ISFSI) was placed in service starting in the summer of 2006. There have been no gaseous or liquid releases from the ISFSI. In 2015 the dose to the nearest resident to the ISFSI was zero, using environmental dosimeters from the Radiological Environmental Monitoring Program. As reported in the 2015 Annual Radiological Environmental Operating Report (AREOR), a hypothetical analysis was performed where a member of the public remains in the area of the ISFSI pad for 20 days during the year. This hypothetical dose was calculated as 3.9 mrem, which was well below the 40 CFR 190 and 10 CFR 72.104 total body dose limit of 25 mrem.

13. Effluent Trends

The following trend graphs show the total curies of liquid and gaseous effluents released for Salem and Hope Creek from 2005 through 2015.

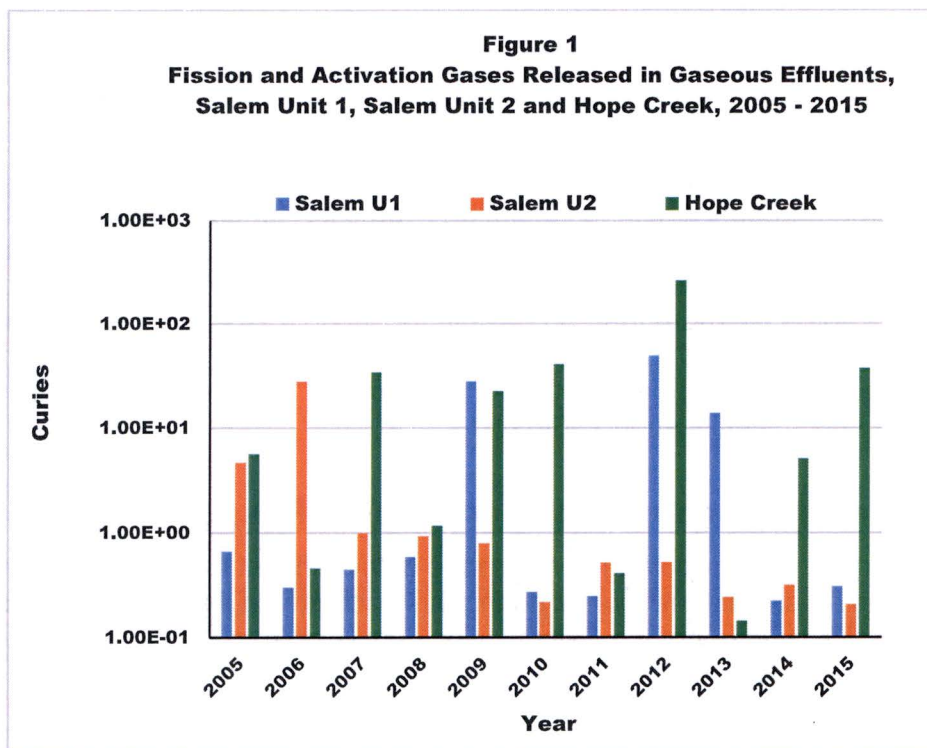


Figure 2
Iodines Released in Gaseous Effluents, Salem Unit 1,
Salem Unit 2 and Hope Creek, 2005 - 2015

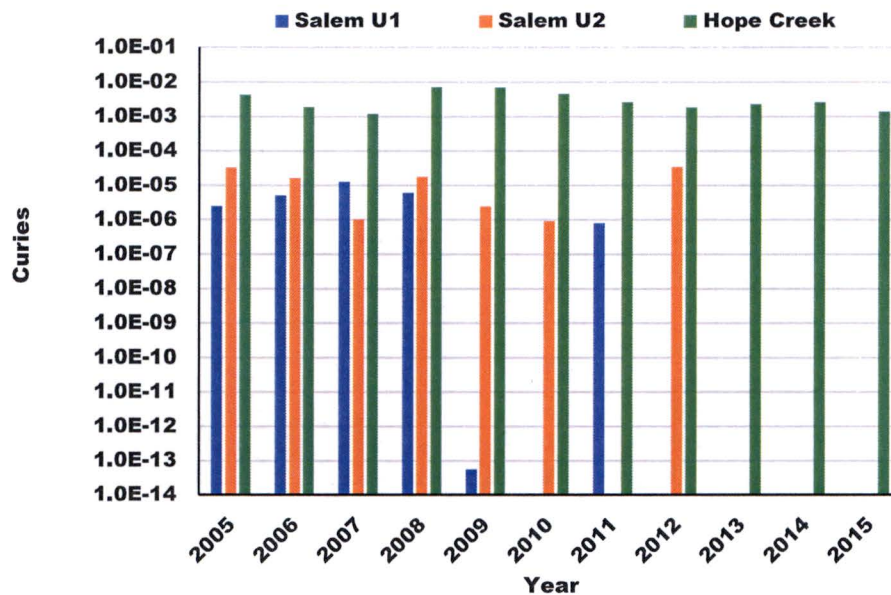


Figure 3
Particulates Released in Gaseous Effluents,
Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 - 2015

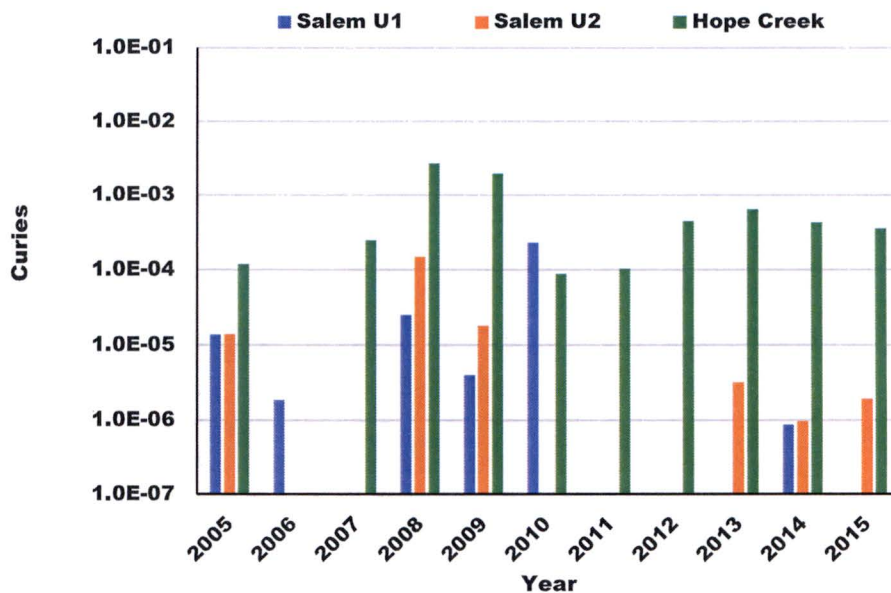


Figure 4
Tritium Released in Gaseous Effluents,
Salem Unit 1, Salem Unit 2 and Hope Creek, 2005 - 2015

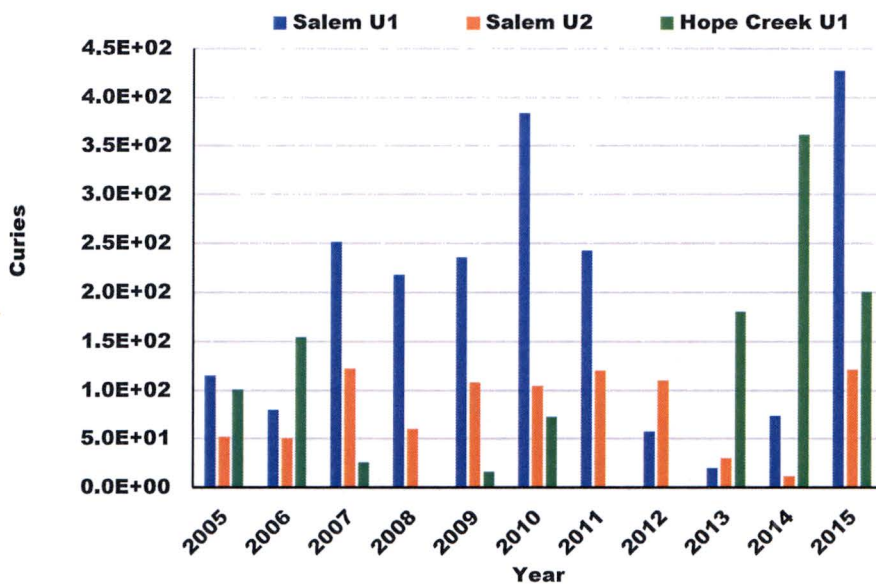
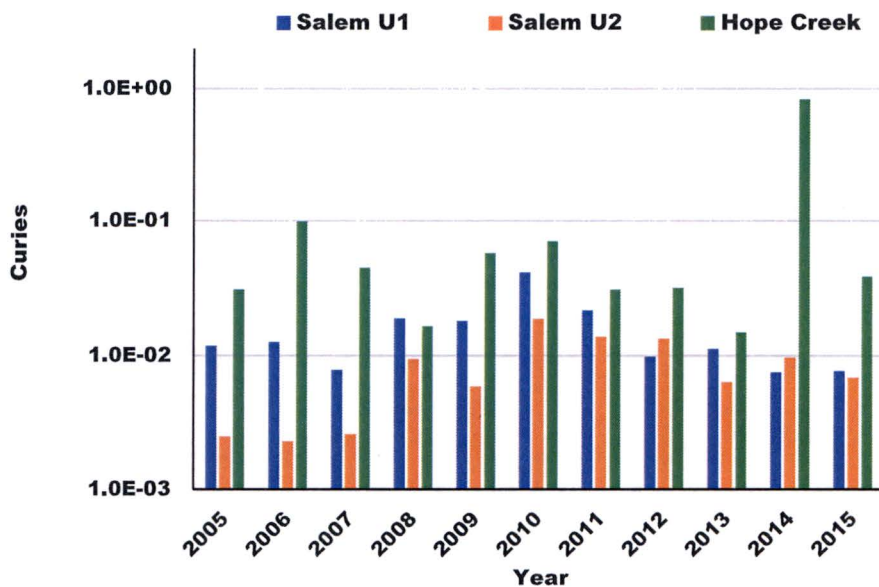
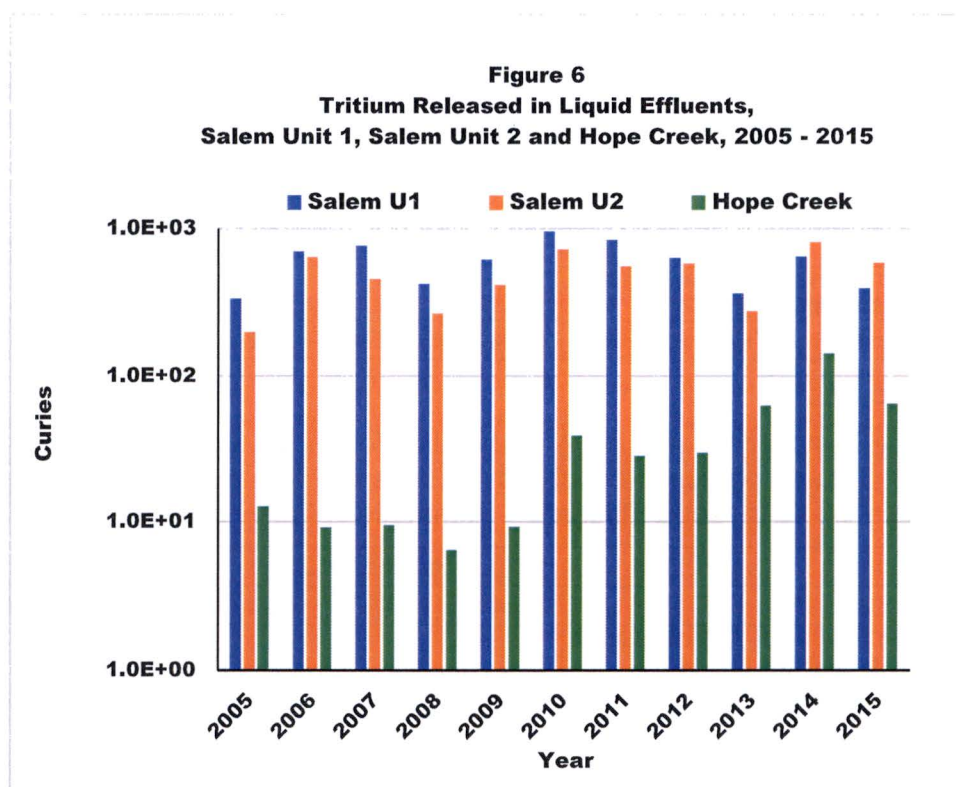


Figure 5
Fission and Activation Products Released in Liquid Effluents,
Salem Unit 1, Salem Unit 2 and Hope Creek,
2005 - 2015





14. Modification to Previous Radioactive Effluent Release Reports –Errata Data Section

The following details corrections to the 2014 ARERR:

Page 14:

The dose limits for Salem Unit 1 for the Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life) were missing.

Table 2 2014 Doses from Gaseous Effluent by Operating Unit

Salem Unit 1					
Gaseous Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Annual
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM Critical Receptor	3.11E-05	4.60E-05	4.40E-05	2.64E-04	3.85E-04
% Dose Limit	4.15E-04	6.14E-04	5.86E-04	3.51E-03	2.56E-03

Page 27

Dose limits for Salem Unit 1 for the Limit for Organ Dose (mrem) from I-131, I-133, Tritium, particulate nuclides (>8 days half-life) and C-14 were incorrect in Table 1A-1 Gaseous Effluents – Summation of all Releases

Salem Unit 1						
	Units	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Annual
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14						
Percent of limit (ODCM 3.11.2.3(a))	%	3.59E-01	3.63E-01	3.67E-01	3.70E-01	7.29E-01

Page 37

Dose limits for Salem Unit 2 for the Limit for Organ Dose (mrem) from I-131, I-133, Tritium, particulate nuclides (>8 days half-life) and C-14 were incorrect in Table 1A-2 Gaseous Effluents – Summation of all Releases

Salem Unit 2						
	Units	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Annual
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14						
Percent of limit (ODCM 3.11.2.3(a))	%	3.01E-01	3.05E-01	3.08E-01	3.08E-01	6.11E-01

Page 39

The percent of the applicable limit (ODCM 3.11.1(a) & (b)) for Table 2A-2 for the Total Column were reversed for the Organ % and Total Body % The correct values are:

Organ % 3.03E-03
Total Body % 2.27E-03

Page 51

Dose limits for Hope Creek for the Limit for Organ Dose (mrem) from I-131, I-133, Tritium, particulate nuclides (>8 days half-life) and C-14 were incorrect in Table 1A-3 Gaseous Effluents – Summation of all Releases

Hope Creek						
	Units	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Annual
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14						
Percent of limit (ODCM 3.11.2.3(a))	%	6.75E-01	7.30E-01	7.73E-01	7.88E-01	1.48E+00

Page 53

The percent of the applicable limit (ODCM 3.11.1(a) & (b)) for Table 2A-3 for the Total Column were incorrect for the Total Body %. The correct value was:

Total Body % 1.23E-01

15. Carbon-14 in Gaseous Effluents

The NRC has identified carbon-14 (C-14) as a potential principal radionuclide for gaseous effluent (refer to Regulatory Position 1.9 in Revision 2 of Regulatory Guide 1.21). Since the publication of Regulatory Guide 1.21, *"Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste"*, Revision 1, June 1974, the radioactive effluents from commercial nuclear power plants have decreased to the point that C-14 was likely to be a principal radionuclide in gaseous effluents. Gaseous effluent releases from a boiling water reactor (BWR), such as the Hope Creek Generating Station, and pressurized water reactor (PWR), such as the Salem Units 1 and 2, can contain significant quantities of C-14, the NRC has recommended that licensees evaluate C-14 as a potential principal radionuclide for gaseous releases from their facility. Those evaluations have determined that C-14 was 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, *"Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents"*, December 2010. 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 F"*, Revision 1, October 1977.

The following assumptions were incorporated into the method:

- Only C-14 in the form of CO₂ was incorporated into vegetation through photosynthesis, which causes dose via the ingestion exposure pathways.
- The concentration of C-14 in vegetation was proportional to the concentration of C-14 in air (per equation C-8 in Regulatory Guide 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) was in the form of CO₂ (EPRI Technical Report 1021106).

Using scaling factors and 2015 power generation data, the estimated total C-14 released in 2015 was 11.6 Ci from Salem Unit 1, 10.2 Ci from Salem Unit 2, and 16.2 Ci from the Hope Creek Generating Station.

The calculated dose contribution of C-14 was determined using the methodology detailed in the Hope Creek's and Salem's ODCMs. The calculated maximum total body and organ (bone) doses from C-14 occurred for a child receptor at 4.6 mile SW (Table 1) using the pathways of inhalation, meat and vegetation. The calculated doses from the estimated C-14 in

gaseous effluents represent about 100% of the bone total dose from the Salem site and 99.9% from the Hope Creek site.

Table 1 Quarterly and Annual Child Bone Doses from Radioactive Gaseous Effluent Releases from the Site to the Critical Receptor and Pathways, 2015.

Bone Dose from other radionuclides	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
Salem Unit 1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Salem Unit 2	0.00E+00	0.00E+00	0.00E+00	4.24E-08	4.24E-08
Hope Creek	2.79E-05	3.28E-05	3.43E-07	0.00E+00	6.11E-05
Total	2.79E-05	3.28E-05	3.43E-07	4.24E-08	6.11E-05
Bone Dose from C-14					
Salem Unit 1	2.84E-02	2.87E-02	2.90E-02	2.90E-02	1.15E-01
Salem Unit 2	2.58E-02	2.61E-02	2.64E-02	2.64E-02	1.05E-01
Hope Creek	4.11E-02	4.16E-02	4.20E-02	4.20E-02	1.67E-01
Total	9.53E-02	9.64E-02	9.74E-02	9.74E-02	3.86E-01

III. Radiological Impact On Man

1. Effluent Doses

The doses from liquid and gaseous effluent represent the maximum potential radiation dose for a member of the general public following the methodology in the station's ODCM and reported by the station's EMS database program.

The annual doses presented in the tables below represent calculations for the four quarters of 2015. The radiological impacts from liquid and gaseous effluent discharges from Salem Units 1 and 2 and Hope Creek Generating Station are presented in Tables 1 and 2, 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.

a. Doses from Liquid Effluent

Quarterly and Annual 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 were those presented in the Salem and Hope Creek ODCMs.

The individual doses from liquid effluent (presented in Table 2) were calculated for the controlling locations described in the Salem and Hope

Creek using the methodology in the ODCMs by the Station EMS database program.

Table 2 2015 Doses and Percent of the Limits from Liquid Effluents by Operating Unit

Salem Unit 1					
Liquid Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	2.32E-06	1.18E-06	4.03E-06	2.03E-05	2.78E-05
% Dose Limit	1.55E-04	7.88E-05	2.69E-04	1.35E-03	9.27E-04
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	6.92E-06	1.33E-06	4.13E-06	2.46E-05	3.69E-05
% Dose Limit	1.38E-04	2.65E-05	8.26E-05	4.91E-04	3.69E-04
Salem Unit 2					
Liquid Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	1.71E-06	1.57E-06	6.84E-06	1.83E-05	2.84E-05
% Dose Limit	1.14E-04	1.05E-04	4.56E-04	1.22E-03	9.46E-04
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	2.49E-06	1.96E-06	7.06E-06	5.96E-05	7.11E-05
% Dose Limit	4.97E-05	3.92E-05	1.41E-04	1.19E-03	7.11E-04
Hope Creek Generating Station					
Liquid Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	4.83E-05	6.07E-05	2.47E-06	1.82E-06	1.13E-04
% Dose Limit	3.22E-03	4.05E-03	1.65E-04	1.22E-04	3.78E-03
Organ Dose Limit (mrem)	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
Maximum Organ Dose (mrem)	1.21E-04	1.83E-04	3.50E-06	1.83E-06	3.10E-04
% Dose Limit	2.42E-03	3.67E-03	7.00E-05	3.66E-05	3.10E-03
Salem-Hope Creek Site Total					
Liquid Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	5.23E-05	6.35E-05	1.33E-05	4.04E-05	1.69E-04
% Dose Limit	1.16E-03	1.41E-03	2.96E-04	8.98E-04	1.88E-03
Organ Dose Limit (mrem)	1.50E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01

Table 2 2015 Doses and Percent of the Limits from Liquid Effluents by Operating Unit

Maximum Organ Dose (mrem)	1.30E-04	1.86E-04	1.47E-05	8.52E-05	4.18E-04
% Dose Limit	8.69E-04	1.24E-03	9.79E-05	5.68E-04	1.39E-03

b. Doses from Gaseous Effluent

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

The individual doses from radioactive gaseous effluents (presented in Table 3) were calculated for the controlling locations described in the Salem and Hope Creek ODCMs using the methodology in the ODCMs by the Station's EMS database program. The dose contribution from Carbon-14 was determined by manual calculations using the methodology listed in the stations' ODCMs and added to the appropriate organ from the EMS printout.

Table 3 2015 Doses and Percent of the Limits from Gaseous Effluents by Generating Station

Salem Unit 1					
Gaseous Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	2.35E-05	1.56E-05	1.43E-05	2.39E-05	7.73E-05
% Dose Limit	4.70E-04	3.12E-04	2.87E-04	4.78E-04	7.73E-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)	8.58E-06	8.56E-06	9.14E-06	1.40E-05	4.03E-05
% Dose Limit	8.58E-05	8.56E-05	9.14E-05	1.40E-04	2.01E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM Critical Receptor (mrem)	1.09E-03	1.84E-04	3.68E-04	5.71E-04	2.21E-03
% Dose Limit	1.45E-02	2.46E-03	4.90E-03	7.61E-03	1.48E-02
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 Critical Receptor (mrem)	2.83E-02	2.87E-02	2.90E-02	2.90E-02	1.15E-01
% Dose Limit	3.78E-01	3.82E-01	3.86E-01	3.86E-01	7.66E-01

Table 3 2015 Doses and Percent of the Limits from Gaseous Effluents by Generating Station (continued)

Salem Unit 2					
Gaseous Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	1.82E-05	2.41E-05	1.80E-05	1.26E-05	7.28E-05
% Dose Limit	3.63E-04	4.82E-04	3.60E-04	2.52E-04	7.28E-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)	6.44E-06	9.06E-06	7.43E-06	1.01E-05	3.30E-05
% Dose Limit	6.44E-05	9.06E-05	7.43E-05	1.01E-04	1.65E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM Critical Receptor	1.86E-04	1.11E-04	1.80E-04	1.56E-04	6.32E-04
% Dose Limit	2.48E-03	1.48E-03	2.40E-03	2.08E-03	4.22E-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 Critical Receptor	2.58E-02	2.61E-02	2.64E-02	2.64E-02	1.05E-01
% Dose Limit	3.44E-01	3.48E-01	3.52E-01	3.52E-01	6.97E-01
Hope Creek					
Gaseous Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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	4.86E-04	6.80E-05	0.00E+00	5.54E-04
% Dose Limit	0.00E+00	9.72E-03	1.36E-03	0.00E+00	5.54E-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)	0.00E+00	1.15E-03	3.00E-03	0.00E+00	4.15E-03
% Dose Limit	0.00E+00	1.15E-02	3.00E-02	0.00E+00	2.07E-02
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
ODCM Critical Receptor	8.77E-03	4.75E-03	1.47E-03	1.69E-03	1.67E-02
% Dose Limit	1.17E-01	6.33E-02	1.97E-02	2.26E-02	1.11E-01
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 Critical Receptor	4.12E-02	4.16E-02	4.21E-02	4.21E-02	1.67E-01
% Dose Limit	5.49E-01	5.54E-01	5.61E-01	5.61E-01	1.11E+00

Table 3 2015 Doses and Percent of the Limits from Gaseous Effluents by Generating Station (continued)

Salem-Hope Creek Site Total					
Gaseous Effluent Parameter	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	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)	4.17E-05	5.26E-04	1.00E-04	3.65E-05	7.04E-04
% Dose Limit	2.78E-04	3.50E-03	6.69E-04	2.43E-04	2.35E-03
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)	1.50E-05	1.17E-03	3.02E-03	1.50E-05	4.22E-03
% Dose Limit	5.01E-05	3.89E-03	1.01E-02	5.00E-05	7.04E-03
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	2.25E+01	2.25E+01	2.25E+01	2.25E+01	4.50E+01
ODCM Critical Receptor	4.25E-02	4.19E-02	4.26E-02	4.28E-02	1.70E-01
% Dose Limit	1.89E-01	1.86E-01	1.90E-01	1.90E-01	3.77E-01
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 Critical Receptor	9.53E-02	9.64E-02	9.75E-02	9.75E-02	3.87E-01
% Dose Limit	4.24E-01	4.28E-01	4.33E-01	4.33E-01	8.60E-01

As a check on the use of conservative historical meteorological dispersion (X/Q) and deposition values (D/Q), the 2015 gaseous release curies (Tables 1C-1, 1C-2 and 1C-3) for each of the three units and the 2015 annual average dispersion and deposition data (Table 4) were used to calculate doses to the critical receptors and pathways identified by the 2015 Land Use Census (LUC). The 2015 LUC did not identify any gardens greater than 500 ft²; however, that pathway was included in the dose analysis. Figure 7 provides a visual representation of site meteorology and receptor locations in relation to the Salem-Hope Creek site.

Table 4 2015 Annual Average Undepleted X/Q, Depleted X/Q and D/Q and Active Exposure Pathways

<u>Receptor Location</u>	<u>Undepleted X/Q</u>	<u>Depleted X/Q</u>	<u>D/Q</u>	<u>Active Exposure Pathways</u>
HCGS SB, 0.5mi N	2.1E-06	1.9E-06	1.3E-08	Plume immersion Ground deposition Inhalation
SGS SB, 0.83mi N	9.7E-07	8.6E-07	5.8E-09	Plume immersion Ground deposition Inhalation
ODCM Dairy, 4.9mi W	5.3E-08	4.0E-08	9.7E-11	Plume immersion Ground deposition Inhalation Milk ingestion
Resident, 3.7mi NW	1.6E-07	1.2E-7	5.8E-10	Plume immersion Ground Deposition Inhalation
Resident-Garden, 4.4mi WSW	7.1E-08	5.4E-08	1.8E-10	Plume immersion Ground Deposition Inhalation Vegetable ingestion
Resident-Meat, 4.2mi NNE	8.4E-06	6.4E-08	3.1E-10	Plume immersion Ground Deposition Inhalation Meat ingestion
Resident-Garden- Meat, 4.6mi SW	1.0E-07	7.6E-08	3.0E-10	Plume immersion Ground Deposition Inhalation Meat ingestion Vegetable ingestion

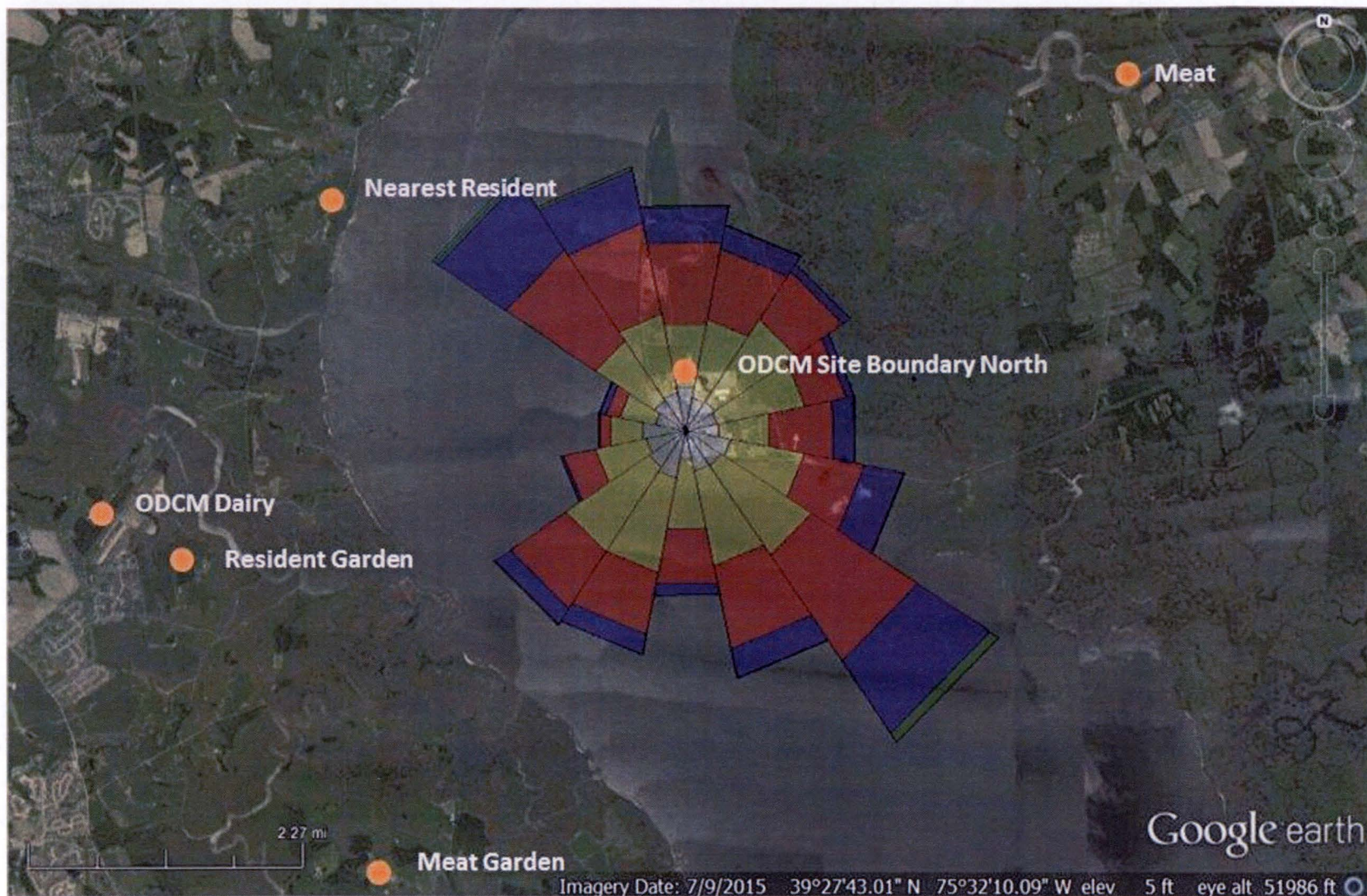


Figure 7 Locations of Dose Calculation Receptors with 2015 Wind Rose Overlay

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

The total body and organ doses from gaseous effluent were calculated using the GASPAR computer program included in the NRCDOSE computer program package (version 2.3.20). The methods used to determine gaseous doses were consistent with the methods described in Salem and Hope Creek ODCMs and in Regulatory Guide 1.109.

Table 5 2015 Total Body and Critical Organ Doses at Real Receptor Locations Using the Annual Meteorological Dispersion and Deposition Data with Gaseous Effluent Releases from Each Generating Station

Generating Station	ODCM Site Boundary 0.5 / 0.8 mi N			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	9.56E-03	9.54E-03	9.56E-03	9.54E-03
Salem Unit 2	2.76E-03	2.74E-03	2.76E-03	2.74E-03
Hope Creek	1.78E-02	1.34E-02	1.78E-02	1.34E-02
Site Total	3.01E-02	2.57E-02	3.01E-02	2.57E-02
Generating Station	ODCM Dairy 4.9 mi W			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	1.25E-03	1.25E-03	6.13E-02	1.44E-02
Salem Unit 2	3.59E-04	3.59E-04	5.58E-02	1.23E-02
Hope Creek	2.61E-03	6.26E-04	8.86E-02	1.96E-02
Site Total	4.22E-03	2.24E-03	2.06E-01	4.63E-02
Generating Station	Nearest Resident 3.7 mi NW			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	1.58E-03	1.57E-03	1.58E-03	1.57E-03
Salem Unit 2	4.54E-04	4.52E-04	4.54E-04	4.52E-04
Hope Creek	1.22E-03	9.16E-04	1.22E-03	9.16E-04
Site Total	3.25E-03	2.94E-03	3.25E-03	2.94E-03

Table 5 2015 Total Body and Critical Organ Doses at Real Receptor Locations Using the Annual Meteorological Dispersion and Deposition Data with Gaseous Effluent Releases from Each Generating Station (continued)

Generating Station	Nearest Resident + Garden 4.4 mi WSW			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	2.84E-03	2.84E-03	8.92E-02	2.07E-02
Salem Unit 2	8.14E-04	8.13E-04	8.12E-02	1.71E-02
Hope Creek	2.33E-03	1.37E-03	1.27E-01	2.68E-02
Site Total	5.98E-03	5.02E-03	2.97E-01	6.46E-02
Generating Station	Meat Animal 4.2 mi NNE			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	1.03E-03	1.03E-03	1.59E-02	4.07E-03
Salem Unit 2	2.97E-04	2.96E-04	1.45E-02	3.15E-03
Hope Creek	7.42E-04	5.80E-04	2.31E-02	5.12E-03
Site Total	2.07E-03	1.91E-03	5.35E-02	1.23E-02
Generating Station	Meat Animal + Garden 4.6 mi SW			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
Salem Unit 1	4.18E-03	4.18E-03	1.45E-01	3.30E-02
Salem Unit 2	1.20E-03	1.20E-03	1.31E-01	2.76E-02
Hope Creek	3.63E-03	2.07E-03	2.09E-01	4.39E-02
Site Total	9.01E-03	7.45E-03	4.85E-01	1.05E-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 was 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 was demonstrated for 2015 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 site represent less than 0.51%

(Total Body) and less than 0.20% (Organ), of the respective dose limits (Table 5 Site Boundary). This confirms that no single unit's radioactive gaseous effluent releases exceeded the Appendix I dose limits. These doses (presented below) were calculated using the GASPAR computer program, which was consistent with the methods described in Regulatory Guide 1.109.

Dose Parameter	Annual Dose
Total Body Dose from Noble Gases, Particulates, Tritium and Carbon-14 – Site Boundary:	2.57E-02 mrem
Percent of Appendix I Annual Limit (5 mrem):	0.51%
Skin Dose from Noble Gases, Particulates, Tritium and Carbon-14 – Site Boundary:	3.01E-02 mrem
Percent of Appendix I Annual Limit (15 mrem):	0.20%

Population doses were not required to be calculated.

2. 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 radioactive 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 radioactive effluents released from Salem Unit 1, Salem Unit 2 and Hope Creek in 2015 resulted in a calculated total body and an organ dose as follows:

Table 6 2015 Total Body and Organ Dose due to Liquid and Gaseous Effluents and Direct Shine ISFSI Dose

Generating Station	Total Body Dose (mrem)		Critical Organ Dose (mrem)		ISFSI (mrem)
	Liquid	Gaseous	Liquid	Gaseous	
Salem Unit 1	2.38E-05	2.52E-02	3.28E-05	1.15E-01	
Salem Unit 2	2.15E-05	2.16E-02	6.41E-05	1.05E-01	
Hope Creek Unit 1	1.13E-04	3.35E-02	3.10E-04	1.67E-01	
Total	1.58E-04	8.03E-02	4.07E-04	3.87E-01	
Total of Liquid and Gaseous	8.05E-02		3.87E-01		3.90E+00

* Includes Carbon-14 dose.

The Total Body and Critical Organ/Age Group doses for the site was 8.05E-02 mrem and 3.87E-01 mrem, respectively to the maximum exposed Member of the Public. The majority of the gaseous effluent dose was due to Carbon-14. The direct shine dose from the ISFSI to a Member of the Public

was conservatively estimated at 3.90E+00 mrem using the dosimetry results of the Radiological Environmental Monitoring Program. The doses calculated were below the limits of 40 CFR 190 and 10 CFR 72.104 or 25 mrem to the total body and critical organ other than the thyroid.

3. Dose to Members of the Public Due to Activities inside the Site Boundary

Dose to members of the public was 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 were 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 0.11 miles SW from the gaseous release points for Salem Units 1 and 2 and 0.17 miles SW from the Hope Creek Generating Station. The GASPAR computer program was used to calculate the doses. The atmospheric dispersion factors used in the dose calculations were provided below.

<u>Plant</u>	<u>Undepleted X/Q</u>	<u>Depleted X/Q</u>	<u>D/Q</u>
Salem	3.1E-05	3.1E-05	1.3E-07
Hope Creek	1.5E-05	1.5E-05	7.2E-08

The calculated TEDE dose for 2015 reporting period was calculated using the GASPAR program and summing the total body and highest organ doses. The site TEDE dose and percent of the limit were:

Parameter	
TEDE Dose from radioactive gaseous effluents to Member of the Public Inside Site Boundary (mrem)	2.24E-01
% of 100 mrem Limit	2.24E-01

APPENDIX A -1

Effluent & Waste Disposal Summary, Salem Unit 1

Page Intentionally Left Blank

List of Tables

Table 1A-1	Liquid Effluents – Summation of All Releases	33
Table 1B-1	Liquid Effluents	34
Table 2A-1	Gaseous Effluents – Summation of All Releases	35
Table 2C-1	Gaseous Effluents – Ground Level Releases	36
Table 3A-2	Solid Waste and Irradiated Fuel Shipments Solid Radwaste Shipped Offsite for Burial or Disposal (Note Salem Unit 1 and Unit 2 data is found in APPENDIX A-2)	47
Table 4A-1	Summary Sheet for Liquid Radioactive Effluents Released in a Batch Mode.....	37
Table 4B-1	Summary Sheet for Gaseous Radioactive Effluents Released in a Batch Mode	37

Page Intentionally Left Blank

TABLE 1A-1

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Salem Unit 1Period: 2015

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	1.44E-03	1.23E-04	1.27E-04	6.05E-03	7.74E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	2.90E-12	2.33E-13	2.33E-13	1.15E-11	3.69E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 19					
B. Tritium							
1. Total Release	Ci	4.43E+01	4.38E+01	1.81E+02	1.26E+02	3.95E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	8.93E-08	8.32E-08	3.31E-07	2.39E-07	1.89E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 19					
C. Dissolved & Entrained Gases							
1. Total Release	Ci	< LLD	1.96E-06	< LLD	2.27E-05	2.47E-05	2.70E+01
2. Average diluted concentration during period	µCi/ml	< LLD	3.72E-15	< LLD	4.31E-14	1.18E-14	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	N/A	1.86E-09	N/A	2.15E-08	5.88E-09	
D. Gross Alpha Activity							
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01
E. Volume Of Waste Released (prior to dilution)	Liters	8.24E+07	8.26E+07	8.46E+07	8.83E+07	3.38E+08	
F. Volume Of Dilution Water Used During Period	Liters	4.96E+11	5.26E+11	5.46E+11	5.27E+11	2.10E+12	

TABLE 1B-1

LIQUID EFFLUENTS

Facility: Salem Unit 1Period: 2015

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	7.67E-01	2.31E-01	4.78E-01	3.29E-01	1.81E+00	4.35E+01	4.36E+01	1.80E+02	1.26E+02	3.93E+02
Fission & Activation Products											
Cr-51	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.26E-04	< LLD	< LLD	2.22E-04	3.48E-04
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	5.75E-06	< LLD	2.35E-07	3.65E-05	4.25E-05
Co-57	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.78E-06	< LLD	1.44E-07	< LLD	4.92E-06
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	8.27E-04	7.95E-05	6.08E-05	1.57E-03	2.54E-03
Co-60	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.45E-04	4.08E-05	3.88E-05	6.73E-04	8.98E-04
Nb-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.87E-05	< LLD	< LLD	< LLD	2.87E-05
Zr-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.65E-05	< LLD	< LLD	< LLD	1.65E-05
Y-91m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	4.64E-06	4.64E-06
Ru-105	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	7.87E-05	7.87E-05
Ag-110m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.52E-06	6.52E-06
Sn-117m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.47E-05	1.47E-05
Sb-122	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.25E-05	1.25E-05
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.19E-04	5.19E-04
Sb-125	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.84E-04	2.26E-06	2.57E-06	2.58E-03	2.87E-03
Cs-134	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.42E-07	1.73E-05	1.76E-05
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.40E-05	2.17E-04	2.41E-04
La-142	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	8.89E-05	8.89E-05
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.44E-03	1.23E-04	1.27E-04	6.05E-03	7.74E-03
Dissolved and Entrained Noble Gases											
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.27E-05	2.27E-05
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.96E-06	< LLD	< LLD	1.96E-06
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.96E-06	< LLD	2.27E-05	2.47E-05

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-1
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Salem Unit 1Period: 2015

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	4.06E-02	6.86E-02	8.09E-02	1.18E-01	3.08E-01	3.400E+01
Average release rate for the period	μCi/sec	5.22E-03	8.72E-03	1.02E-02	1.48E-02	9.77E-03	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	See Table 3 on page 20					
	Beta Air %						
B. Iodine							
Total Iodine – 131.	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.00E+01
Average release rate for the period	μCi/sec	< LLD	< LLD	< LLD	< LLD	< LLD	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.00E+01
Average release rate for the period	μCi/sec	< LLD	< LLD	< LLD	< LLD	< LLD	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	2.11E+02	3.56E+01	7.10E+01	1.10E+02	4.28E+02	3.10E+01
Average release rate for the period	μCi/sec	2.71E+01	4.52E+00	8.93E+00	1.39E+01	1.36E+01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	2.75E+00	2.78E+00	2.81E+00	2.81E+00	1.12E+01	N/A ^a
Average release rate for the period	μCi/sec	3.54E-01	3.53E-01	3.54E-01	3.52E-01	3.55E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					

* Iodine, Tritium, Carbon-14, and Particulates were 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).

^a. 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)

TABLE 2C-1

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: Salem Unit 1Period: 2015

Nuclides Released	Unit	Continuous Mode					Batch Mode				
1.Fission gases		Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.60E-02	2.21E-02	1.95E-02	3.33E-02	1.11E-01
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.51E-03	4.54E-02	5.95E-02	8.22E-02	1.92E-01
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.07E-03	1.88E-03	2.12E-03	5.07E-03
Total	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.06E-02	6.86E-02	8.09E-02	1.18E-01	3.08E-01
2. Iodines											
None											
3. Particulates											
None											
4. Tritium	Ci	2.10E+02	3.54E+01	7.06E+01	1.10E+02	4.26E+02	6.11E-02	1.27E-01	3.72E-01	3.00E-01	8.60E-01
5. Carbon-14	Ci	2.75E+00	2.78E+00	2.81E+00	2.81E+00	1.12E+01	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 4A-1

SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Salem Unit 1Period: 2015

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	18	22	26	20	86
Total time period for batch releases (min)	7940.00	3100.90	3831.20	3397.77	18269.87
Maximum time period for batch release (min)	1142.00	464.00	434.00	538.00	1142.00
Average time period for batch release (min)	441.11	140.95	147.35	169.89	212.44
Minimum time period for batch release (min)	241.00	0.25	0.42	0.42	0.25
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	6.25E+07	1.70E+08	1.43E+08	1.55E+08	1.15E+08

TABLE 4B-1

SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Salem Unit 1Period: 2015

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	122	96	92	110	420
Total time period for batch releases (min)	13171.00	7506.00	8516.00	9807.00	39000.00
Maximum time period for batch release (min)	671.00	124.00	690.00	195.00	690.00
Average time period for batch release (min)	107.96	78.19	92.57	89.15	92.86
Minimum time period for batch release (min)	28.00	5.00	48.00	30.00	5.00

Page Intentionally Left Blank

APPENDIX A -2

Effluent & Waste Disposal Summary, Salem Unit 2

Page Intentionally Left Blank

List of Tables

Table 1A-2	Liquid Effluents – Summation of All Releases	43
Table 1B-2	Liquid Effluents	44
Table 2A-2	Gaseous Effluents – Summation of All Releases.....	45
Table 2C-2	Gaseous Effluents – Ground Level Releases	46
Table 3A-2	Solid Waste and Irradiated Fuel Shipments Solid Radwaste Shipped Offsite for Burial or Disposal	47
Table 4A-2	Summary Sheet for Liquid Radioactive Effluents Released in a Batch Mode.....	52
Table 4B-2	Summary Sheet for Gaseous Radioactive Effluents Released in a Batch Mode	52

Page Intentionally Left Blank

TABLE 1A-2

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Salem Unit 2Period: 2015

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	5.17E-04	4.04E-04	8.63E-05	5.93E-03	6.94E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.19E-12	8.39E-13	1.78E-13	1.71E-11	3.97E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 19					
B. Tritium							
1. Total Release	Ci	4.34E+01	5.76E+01	2.38E+02	2.52E+02	5.91E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.00E-07	1.20E-07	4.92E-07	7.26E-07	3.38E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 19					
C. Dissolved & Entrained Gases							
1. Total Release	Ci	< LLD	5.30E-06	4.94E-06	2.74E-05	3.76E-05	2.70E+01
2. Average diluted concentration during period	µCi/ml	< LLD	1.10E-14	1.02E-14	7.90E-14	2.15E-14	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	< LLD	5.50E-09	5.10E-09	3.95E-08	1.08E-08	
D. Gross Alpha Activity							
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01
E. Volume Of Waste Released (prior to dilution)	Liters	5.00E+07	5.03E+07	5.10E+07	3.64E+07	1.88E+08	
F. Volume Of Dilution Water Used During Period	Liters	4.34E+11	4.81E+11	4.84E+11	3.48E+11	1.75E+12	

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

TABLE 1B-2
LIQUID EFFLUENTS

Facility: Salem Unit 2

Period: 2015

Nuclides Released		Continuous Mode					Batch Mode				
	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	1.34E-01	2.92E-02	3.15E-02	< LLD	1.95E-01	4.33E+01	5.76E+01	2.38E+02	2.52E+02	5.91E+02
Fission and Activation Products											
Cr-51	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.37E-04	5.37E-04
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	7.41E-06	7.41E-06
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.67E-04	3.69E-04	5.69E-05	1.83E-03	2.62E-03
Co-60	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.19E-05	2.65E-05	1.02E-05	1.11E-03	1.18E-03
Zr-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.65E-05	5.65E-05
Nb-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.81E-06	< LLD	< LLD	9.89E-05	1.03E-04
Nb-97	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.66E-06	5.66E-06
Ru-105	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	7.39E-05	7.39E-05
Ag-110m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.49E-05	2.49E-05
Sn-117m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.48E-05	1.48E-05
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.26E-04	3.26E-04
Sb-125	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.14E-04	8.11E-06	7.35E-06	1.74E-03	1.87E-03
Te-132	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.25E-05	1.25E-05
I-132	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.47E-05	1.47E-05
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.76E-05	6.76E-05
Ce-144	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.19E-05	< LLD	1.19E-05
W-187	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.81E-05	1.81E-05
Other	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.01E-06	< LLD	< LLD	< LLD	1.01E-06
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	5.17E-04	4.04E-04	8.63E-05	5.93E-03	6.94E-03
Dissolved and Entrained Noble Gases											
Kr-87	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	4.94E-06	< LLD	4.94E-06
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.30E-06	< LLD	2.74E-05	3.27E-05
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.30E-06	4.94E-06	2.74E-05	3.76E-05

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-2

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Salem Unit 2Period: 2015

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	2.85E-02	4.54E-02	4.37E-02	9.13E-02	2.09E-01	3.400E+01
Average release rate for the period	μCi/sec	3.66E-03	5.78E-03	5.50E-03	1.15E-02	6.62E-03	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	See Table 3 on page 20					
	Beta Air %						
B. Iodine							
Total Iodine – 131.	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.00E+01
Average release rate for the period	μCi/sec	< LLD	< LLD	< LLD	< LLD	< LLD	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	< LLD	< LLD	< LLD	1.93E-06	1.93E-06	3.00E+01
Average release rate for the period	μCi/sec	< LLD	< LLD	< LLD	2.43E-07	6.12E-08	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	3.59E+01	2.14E+01	3.47E+01	3.00E+01	1.22E+02	3.10E+01
Average release rate for the period	μCi/sec	4.61E+00	2.74E+00	4.36E+00	3.78E+00	3.87E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	2.50E+00	2.53E+00	2.56E+00	2.56E+00	1.02E+01	N/A ^a
Average release rate for the period	μCi/sec	3.21E-01	3.22E-01	3.22E-01	3.22E-01	3.22E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					

* Iodine, Tritium, Carbon-14, and Particulates were 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).

^a. 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)

TABLE 2C-2

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: Salem Unit 2Period: 2015

Nuclides Released		Continuous Mode					Batch Mode				
1. Fission gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.80E-02	3.68E-02	2.71E-02	1.47E-02	1.07E-01
Kr-85m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.44E-04	1.44E-04
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.92E-04	8.18E-03	1.63E-02	6.48E-02	8.98E-02
Xe-133m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.94E-04	2.70E-04	1.07E-03	1.73E-03
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	4.36E-05	1.39E-04	1.06E-02	1.08E-02
Total	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.85E-02	4.54E-02	4.37E-02	9.13E-02	2.09E-01
2. Iodines											
None											
3. Particulates											
Cr-51	Ci	< LLD	< LLD	< LLD	6.21E-07	6.21E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Mn-54	Ci	< LLD	< LLD	< LLD	4.38E-08	4.38E-08	< LLD	< LLD	< LLD	< LLD	< LLD
Co-58	Ci	< LLD	< LLD	< LLD	3.77E-07	3.77E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Co-60	Ci	< LLD	< LLD	< LLD	2.81E-07	2.81E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Zr-95	Ci	< LLD	< LLD	< LLD	1.72E-07	1.72E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Nb-95	Ci	< LLD	< LLD	< LLD	2.73E-07	2.73E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Other	Ci	< LLD	< LLD	< LLD	1.60E-07	1.60E-07	< LLD	< LLD	< LLD	< LLD	< LLD
Total	Ci	< LLD	< LLD	< LLD	1.93E-06	1.93E-06	< LLD	< LLD	< LLD	< LLD	< LLD
4. Tritium	Ci	3.58E+01	2.12E+01	3.45E+01	2.98E+01	1.21E+02	3.70E-02	2.34E-01	1.91E-01	2.20E-01	6.82E-01
5. Carbon-14	Ci	2.50E+00	2.53E+00	2.56E+00	2.56E+00	1.02E+01	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (Not Irradiated Fuel)

Facility: Salem Units 1 and 2Period: 2015

a. Waste Stream; Resins, Filters, and Evaporator Bottoms
Liquid Waste Processing Resin

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	3.44E+02	9.74E+00	4.23E+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	3.44E+02	9.74E+00	4.23E+00	+/-25%

Major Nuclides for Above Table:

Percent Cutoff 1%

Resins, Filters and Evaporator Bottoms		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	6.03	2.55E-01
Mn-54	1.01	4.28E-02
Fe-55	5.73	2.42E-01
Co-58	34.41	1.45E+00
Co-60	21.85	9.24E-01
Ni-63	21.82	9.23E-01
Nb-95	1.64	6.92E-02
Sb-125	2.46	1.04E-01
Cs-137	2.16	9.13E-02

Resins, Filters and Evaporator Bottoms		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	6.03	2.55E-01
Mn-54	1.01	4.28E-02
Fe-55	5.73	2.42E-01
Co-58	34.41	1.45E+00
Co-60	21.85	9.24E-01
Ni-63	21.82	9.23E-01
Nb-95	1.64	6.92E-02
Sb-125	2.46	1.04E-01
Cs-137	2.16	9.13E-02

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

b. Waste Stream; Dry Active Waste
Seavan DAW

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.68E+04	4.76E+02	6.83E-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	1.68E+04	4.76E+02	6.83E-01	+/-25%

Major Nuclides for Above Table:

Percent Cutoff 1%

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	8.54	5.85E-02
Fe-55	30.42	2.08E-01
Co-58	26.68	1.83E-01
Co-60	9.06	6.21E-02
Ni-63	19.03	1.30E-01
Cs-137	3.05	2.09E-02

Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	8.54	5.85E-02
Fe-55	30.42	2.08E-01
Co-58	26.68	1.83E-01
Co-60	9.06	6.21E-02
Ni-63	19.03	1.30E-01
Cs-137	3.05	2.09E-02

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

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	1.04E+04	2.94E+02	6.66E-05	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.04E+04	2.94E+02	6.66E-05	+/-25%

Major Nuclides for Above Table:

Percent Cutoff 1%

Other Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Co-60	5.57	3.71E-06
Cd-109	85.20	5.68E-05
Cs-134	2.94	1.96E-06
Cs-137	6.29	4.19E-06

Other Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Co-60	5.57	3.71E-06
Cd-109	85.20	5.68E-05
Cs-134	2.94	1.96E-06
Cs-137	6.29	4.19E-06

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

e. Waste Stream; Sum of All 4 Categories
Seavan DAW, Liquid Waste Processing Resin

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	2.75E+04	7.79E+02	4.91E+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	2.75E+04	7.79E+02	4.91E+00	+/-25%

Major Nuclides for Above Table:

Percent Cutoff 1%

Waste Stream; Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	6.38	3.13E-01
Fe-55	9.17	4.50E-01
Co-58	33.33	1.64E+00
Co-60	20.07	9.86E-01
Ni-63	21.43	1.05E+00
Nb-95	1.42	6.99E-02
Sb-125	2.26	1.11E-01
Cs-137	2.28	1.12E-01

Waste Stream; Sum of All 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	6.38	3.13E-01
Fe-55	9.17	4.50E-01
Co-58	33.33	1.64E+00
Co-60	20.07	9.86E-01
Ni-63	21.43	1.05E+00
Nb-95	1.42	6.99E-02
SB-125	2.26	1.11E-01
Cs-137	2.28	1.12E-01

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

Number of Shipments	Mode Of Transportation	Destination
12	Environmental Protection And Improvement Company	Chemical Waste Management, Inc. Highway 17 North Mile marker 163
2	Hittman Transport Services, Inc.	Energy Solutions Services Inc. Barnwell Processing Facility
6	Hittman Transport Services, Inc.	Energy Solutions Services Inc. 1560 Bear Creek Road
1	Hittman Transport Services, Inc.	Energy Solutions Services Inc. 1560 Bear Creek Road

TABLE 4A-2

SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Salem Unit 2Period: 2015

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	15	11	13	27	66
Total time period for batch releases (min)	5369.00	4179.00	4682.00	13042.00	27272.00
Maximum time period for batch release (min)	503.00	506.00	480.00	3246.00	3246.00
Average time period for batch release (min)	357.93	379.91	360.15	483.04	413.21
Minimum time period for batch release (min)	302.00	302.00	295.00	43.00	43.00
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	8.08E+07	1.15E+08	1.03E+08	2.67E+07	6.41E+07

TABLE 4B-2

SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Salem Unit 2Period: 2015

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	75	85	77	97	334
Total time period for batch releases (min)	6909.00	6903.00	6314.00	19489.13	39615.13
Maximum time period for batch release (min)	180.00	660.00	1045	1614.00	1614.00
Average time period for batch release (min)	92.12	81.21	82.00	200.92	118.61
Minimum time period for batch release (min)	47.00	38.00	8.00	20.00	8.00

APPENDIX A -3

Effluent & Waste Disposal Summary, Hope Creek Unit 1

Page Intentionally Left Blank

List of Tables

Table 1A-3	Liquid Effluents – Summation of All Releases	57
Table 1B-3	Liquid Effluents	58
Table 2A-3	Gaseous Effluents – Summation of All Releases.....	59
Table 2C-3	Gaseous Effluents – Ground Level Releases	60
Table 3A-3	Solid Waste and Irradiated Fuel Shipments Solid Radwaste Shipped Offsite for Burial or Disposal	61
Table 4A-3	Summary Sheet for Liquid Radioactive Effluents Released in a Batch Mode.....	67
Table 4B-3	Summary Sheet for Gaseous Radioactive Effluents Released in a Batch Mode	67

Page Intentionally Left Blank

TABLE 1A-3

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Hope Creek Unit 1Period: 2015

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %	
1. Total Release (not including tritium, gases & alpha)	Ci	4.08E-03	3.36E-02	1.11E-03	3.47E-05	3.88E-02	2.70E+01	
2. Average diluted concentration during period	µCi/ml	3.28E-10	1.90E-09	5.13E-11	2.56E-12	5.94E-10	See Table 2 on page 19	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %							
	Organ %							
B. Tritium								
1. Total Release	Ci	2.26E+01	3.50E+01	6.68E+00	1.00E+00	6.53E+01	2.70E+01	
2. Average diluted concentration during period	µCi/ml	1.81E-06	1.98E-06	3.09E-07	7.38E-08	9.99E-07	See Table 2 on page 19	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %							
	Organ %							
C. Dissolved & Entrained Gases								
1. Total Release	Ci	1.06E-06	5.13E-04	2.42E-06	< LLD	5.16E-04	2.70E+01	
2. Average diluted concentration during period	µCi/ml	8.53E-14	2.89E-11	1.12E-13	< LLD	7.90E-12		
3. Percent of applicable limit (ODCM 3.11.1.1)	%	4.27E-08	1.45E-05	5.60E-08	N/A	3.95E-06		
D. Gross Alpha Activity								
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01	
E. Volume Of Waste Released (prior to dilution)	Liters	1.55E+07	1.27E+07	2.07E+07	1.30E+07	6.19E+07		
F. Volume Of Dilution Water Used During Period	Liters	1.24E+10	1.77E+10	2.16E+10	1.36E+10	6.53E+10		

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

TABLE 1B-3

LIQUID EFFLUENTS

Facility: Hope Creek Unit 1

Period: 2015

Nuclides Released		Continuous Mode					Batch Mode				
	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	1.53E-01	7.54E-01	1.36E+00	7.93E-01	3.06E+00	2.24E+01	3.43E+01	5.32E+00	2.08E-01	6.22E+01
Fission and Activation Products											
Na-24	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.03E-04	2.94E-05	< LLD	6.32E-04
Cr-51	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	8.05E-04	9.87E-06	< LLD	8.15E-04
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.93E-04	6.08E-03	1.47E-04	2.01E-06	6.72E-03
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.74E-04	2.44E-03	4.14E-05	< LLD	2.76E-03
Fe-59	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.46E-05	< LLD	< LLD	3.46E-05
Co-60	Ci	< LLD	< LLD	1.17E-05	< LLD	1.17E-05	2.57E-03	2.02E-02	6.86E-04	3.27E-05	2.35E-02
Zn-65	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.42E-04	1.46E-03	6.06E-05	< LLD	1.86E-03
Zn-69m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.30E-06	< LLD	< LLD	< LLD	7.30E-06
Zr-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.08E-05	< LLD	< LLD	1.08E-05
Nb-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.89E-05	1.26E-06	< LLD	2.02E-05
Y-91	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.26E-04	< LLD	< LLD	5.26E-04
Y-91m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.15E-07	< LLD	< LLD	1.15E-07
Y-92	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.25E-05	< LLD	< LLD	5.25E-05
Mo-99	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.90E-06	1.41E-06	< LLD	3.31E-06
Tc-99m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.93E-06	1.43E-06	< LLD	3.36E-06
Ru-105	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.23E-05	< LLD	< LLD	1.23E-05
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.77E-04	2.51E-05	< LLD	3.02E-04
Sb-125	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.37E-04	< LLD	< LLD	1.37E-04
I-131	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.71E-06	1.41E-06	< LLD	3.12E-06
Te-132	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.48E-07	4.65E-07	< LLD	1.11E-06
Cs-134	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.64E-05	2.68E-04	1.73E-05	< LLD	3.62E-04
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.11E-04	6.90E-04	6.22E-05	< LLD	1.06E-03
Cs-138	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.78E-05	< LLD	< LLD	1.78E-05
Ce-141	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.93E-06	1.44E-06	< LLD	< LLD	4.37E-06
Np-239	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.63E-06	< LLD	< LLD	3.63E-06
Other	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.07E-05	1.19E-05	< LLD	3.26E-05
Total for Period	Ci	< LLD	< LLD	1.17E-05	< LLD	1.17E-05	4.08E-03	3.36E-02	1.10E-03	3.47E-05	3.88E-02
Dissolved and Entrained Noble Gases											
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.36E-05	< LLD	< LLD	2.36E-05
Xe-133	Ci	< LLD	1.63E-05	< LLD	< LLD	1.63E-05	< LLD	4.51E-04	< LLD	< LLD	4.51E-04
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.06E-06	2.14E-05	< LLD	2.46E-06	2.25E-05
Total for Period	Ci	< LLD	1.63E-05	< LLD	< LLD	1.63E-05	1.06E-06	4.96E-04	< LLD	2.46E-06	5.00E-04

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-3

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: Hope Creek Unit 1Period: 2015

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	< LLD	1.43E+01	2.35E+01	< LLD	3.78E+01	3.400E+01
Average release rate for the period	μCi/sec	N/A	1.82E+00	2.95E+00	N/A	1.20E+00	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	See Table 3 on page 20					
	Beta Air %						
B. Iodine							
Total Iodine – 131.	Ci	7.03E-04	4.48E-04	1.32E-04	1.25E-04	1.41E-03	3.00E+01
Average release rate for the period	μCi/sec	9.05E-05	5.69E-05	1.66E-05	1.58E-05	4.47E-05	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	8.90E-05	1.80E-04	6.75E-05	2.18E-05	3.58E-04	3.00E+01
Average release rate for the period	μCi/sec	1.15E-05	2.30E-05	8.49E-06	2.74E-06	1.14E-05	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	7.97E+01	2.52E+01	3.44E+01	6.16E+01	2.01E+02	3.10E+01
Average release rate for the period	μCi/sec	1.03E+01	3.20E+00	4.33E+00	7.74E+00	6.37E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	3.99E+00	4.03E+00	4.08E+00	4.08E+00	1.62E+01	N/A ^a
Average release rate for the period	μCi/sec	5.12E-01	5.13E-01	5.14E-01	5.14E-01	5.14E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 20					

* Iodine, Tritium, Carbon-14, and Particulates were 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).

^a. 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)

TABLE 2C-3

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: Hope Creek Unit 1Period: 2015

Nuclides Released		Continuous Mode					Batch Mode				
1. Fission gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Kr-85	Ci	< LLD	< LLD	2.17E+01	< LLD	2.17E+01	< LLD	< LLD	< LLD	< LLD	< LLD
Xe-131m	Ci	< LLD	2.04E-05	< LLD	< LLD	2.04E-05	< LLD	< LLD	< LLD	< LLD	< LLD
Xe-133	Ci	< LLD	1.30E+01	1.78E+00	< LLD	1.48E+01	< LLD	2.42E-04	< LLD	< LLD	2.42E-04
Xe-135	Ci	< LLD	1.34E+00	< LLD	< LLD	1.34E+00	< LLD	1.27E-04	< LLD	< LLD	1.27E-04
Total	Ci	< LLD	1.43E+01	2.35E+01	< LLD	3.78E+01	< LLD	3.69E-04	< LLD	< LLD	3.69E-04
2. Iodines											
I-131	Ci	7.03E-04	4.48E-04	1.32E-04	1.25E-04	1.41E-03	< LLD	< LLD	< LLD	< LLD	< LLD
I-133	Ci	1.49E-02	2.54E-03	5.24E-04	6.31E-04	1.86E-02	< LLD	< LLD	< LLD	< LLD	< LLD
Total	Ci	1.56E-02	2.99E-03	6.56E-04	7.56E-04	2.00E-02	< LLD	< LLD	< LLD	< LLD	< LLD
3. Particulates											
Na-24	Ci	< LLD	3.45E-05	2.08E-04	< LLD	2.43E-04	< LLD	< LLD	< LLD	< LLD	< LLD
Co-58	Ci	< LLD	< LLD	2.61E-06	< LLD	2.61E-06	< LLD	< LLD	< LLD	< LLD	< LLD
Co-60	Ci	8.90E-05	1.81E-04	6.48E-05	1.92E-05	3.54E-04	< LLD	< LLD	< LLD	< LLD	< LLD
Br-82	Ci	< LLD	< LLD	1.51E-05	< LLD	1.51E-05	< LLD	< LLD	< LLD	< LLD	< LLD
Y-91m	Ci	< LLD	< LLD	3.05E-03	< LLD	3.05E-03	< LLD	< LLD	< LLD	< LLD	< LLD
La-140	Ci	< LLD	< LLD	< LLD	3.46E-06	3.46E-06	< LLD	< LLD	< LLD	< LLD	< LLD
Ba-141	Ci	< LLD	< LLD	2.94E-04	< LLD	2.94E-04	< LLD	< LLD	< LLD	< LLD	< LLD
Nd-147	Ci	< LLD	< LLD	< LLD	2.58E-06	2.58E-06	< LLD	< LLD	< LLD	< LLD	< LLD
Total	Ci	8.90E-05	2.15E-04	3.63E-03	2.52E-05	3.96E-03	< LLD	< LLD	< LLD	< LLD	< LLD
4. Tritium	Ci	7.97E+01	2.52E+01	3.44E+01	6.16E+01	2.01E+02	< LLD	3.04E-03	< LLD	< LLD	3.04E-03
5. Carbon-14	Ci	3.99E+00	4.03E+00	4.08E+00	4.08E+00	1.62E+01	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (Not Irradiated Fuel)

Facility: Hope Creek Unit 1Period: 2015**a. Waste Stream; Resins, Filters, and Evaporator Bottoms**

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.78E+03	5.04E+01	2.50E+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	1.78E+03	5.04E+01	2.50E+01	+/-25%

Major Nuclides for Above Table:

Percent Cutoff: 1%

Resins, Filters and Evaporator Bottoms**Waste Class A**

Nuclide Name	Percent Abundance	Curies
C-14	13.05	3.27E+00
Mn-54	3.23	8.10E-01
Fe-55	32.27	8.08E+00
Co-60	35.97	9.01E+00
Ni-63	11.67	2.92E+00
Zn-65	1.38	3.46E-01

Resins, Filters and Evaporator Bottoms**Waste Class All**

Nuclide Name	Percent Abundance	Curies
C-14	13.05	3.27E+00
Mn-54	3.23	8.10E-01
Fe-55	32.27	8.08E+00
Co-60	35.97	9.01E+00
Ni-63	11.67	2.92E+00
Zn-65	1.38	3.46E-01

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

a. Waste Stream; Dry Active Waste

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	3.65E+04	1.03E+03	5.57E-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	3.65E+04	1.03E+03	5.57E-01	+/-25%

Major Nuclides for Above Table:

Percent Cutoff: 1%

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Mn-54	7.37	4.13E-02
Fe-55	24.99	1.40E-01
Co-60	59.14	3.31E-01
Ni-63	3.41	1.91E-02
Zn-65	1.63	9.16E-03

Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	7.37	4.13E-02
Fe-55	24.99	1.40E-01
Co-60	59.14	3.31E-01
Ni-63	3.41	1.91E-02
Zn-65	1.63	9.16E-03

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

b. 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	1.08E+01	3.05E-01	8.81E+03	+/-25%
All	1.08E+01	3.05E-01	8.81E+03	+/-25%

Major Nuclides for Above Table:

Percent Cutoff: 1%

Irradiated Components		
Waste Class C		
Nuclide Name	Percent Abundance	Curies
Mn-54	2.18	1.92E+02
Fe-55	56.83	5.00E+03
Co-60	34.29	3.02E+03
Ni-63	4.45	3.92E+02

Irradiated Components		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	2.18	1.92E+02
Fe-55	56.83	5.00E+03
Co-60	34.29	3.02E+03
Ni-63	4.45	3.92E+02

c. Waste Stream; Other Waste

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.17E+03	3.31E+01	5.08E-06	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.17E+03	3.31E+01	5.08E-06	+/-25%

Major Nuclides for Above Table:

Percent Cutoff: 1%

Other Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
Mn-54	1.70	6.28E-06
Fe-55	9.94	3.67E-05
Co-60	67.94	2.51E-04
Ni-63	19.19	7.08E-05

Other Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	1.70	6.28E-06
Fe-55	9.94	3.67E-05
Co-60	67.94	2.51E-04
Ni-63	19.19	7.08E-05

d. Waste Stream; Sum of All 4 Categories

Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	3.95E+04	1.12E+03	2.55E+01	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	1.08E+01	3.05E-01	8.81E+03	+/-25%
All	3.95E+04	1.12E+03	8.83E+03	+/-25%

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
 (Not Irradiated Fuel)

Major Nuclides for Above Table:

Percent Cutoff: 1%

Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
C-14	12.77	3.27E+00
Mn-54	3.33	8.51E-01
Fe-55	32.11	8.22E+00
Co-60	36.48	9.34E+00
Ni-63	11.49	2.94E+00
Zn-65	1.39	3.55E-01
Waste Class C		
Nuclide Name	Percent Abundance	Curies
Mn-54	2.18	1.92E+02
Fe-55	56.83	5.00E+03
Co-60	34.29	3.02E+03
Ni-63	4.45	3.92E+02
Sum of All 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
Mn-54	2.18	1.93E+02
Fe-55	56.76	5.01E+03
Co-60	34.30	3.03E+03
Ni-63	4.47	3.95E+02

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Number of Shipments	Mode Of Transportation	Destination
2	Hittman Transport Services, Inc.	Barnwell Disposal Facility Operated by Chem-Nuclear Systems, Inc.
9	Hittman Transport Services, Inc.	Energy Solutions – BCO Bear Creek Operations
2	Hittman Transport Services, Inc.	Energy Solutions – GRF Gallaher Road Facility
8	Hittman Transport Services, Inc.	Energy Solutions, LLC Barnwell Processing Facility
1	Hittman Transport Services, Inc.	Energy Solutions – BCO Bear Creek Operations
1	Hittman Transport Services, Inc.	Energy Solutions, LLC Barnwell Processing Facility
2	R&R Trucking	Babcock Services, Inc. Oak Ridge Service Center
11	R&R Trucking	Babcock Services, Inc. Oak Ridge Service Center

TABLE 4A-3SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Hope Creek Unit 1Period: 2015

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	33	100	23	3	159
Total time period for batch releases (min)	2324.82	6837.80	1646.18	167.48	10976.28
Maximum time period for batch release (min)	81.02	89.80	87.02	95.53	95.53
Average time period for batch release (min)	70.45	68.38	71.57	55.83	69.03
Minimum time period for batch release (min)	35.08	13.00	47.25	31.95	13.00
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	5.33E+06	2.59E+06	1.31E+07	8.12E+07	5.95E+06

TABLE 4B-3SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS
RELEASED IN A BATCH MODEFacility: Hope Creek Unit 1Period: 2015

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	0	2	0	0	2
Total time period for batch releases (min)	0.00	1800.00	0.00	0.00	1800.00
Maximum time period for batch release (min)	0.00	1440.00	0.00	0.00	1440.00
Average time period for batch release (min)	0.00	900.00	0.00	0.00	900.00
Minimum time period for batch release (min)	0.00	360.00	0.00	0.00	360.00

Page Intentionally Left Blank

APPENDIX B

Meteorological Data

Page Intentionally Left Blank

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 2015

Page Intentionally Left Blank

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	0	1	0	0	0	1
11.25 - 33.75	NNE	0	0	0	0	0	0	1	0	3	0	0	4
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	1	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	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	1	1	1	0	0	3
258.75 - 281.25	W	0	0	0	0	0	0	0	2	0	0	0	2
281.25 - 303.75	WNW	0	0	0	0	0	1	0	0	0	0	0	1
303.75 - 326.25	NW	0	0	0	0	0	0	0	6	13	1	0	20
326.25 - 348.75	NNW	0	0	0	0	0	0	1	6	1	2	0	10

Total 43

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	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	0.047	0.000	0.141	0.000	0.000	0.19
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	0.047	0.047	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	0.000	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	0.047	0.047	0.047	0.000	0.000	0.14
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.094	0.000	0.000	0.000	0.09
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.047	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	0.000	0.000	0.000	0.282	0.611	0.047	0.000	0.94
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.282	0.047	0.094	0.000	0.47

Total 2.02

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	2	1	0	1	0	0	4
11.25 - 33.75	NNE	0	0	0	0	0	2	1	1	3	0	0	7
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	3	0	0	0	0	3
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	1	1	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	0	1	1	2	0	0	0	4
258.75 - 281.25	W	0	0	0	0	0	3	4	3	0	0	0	10
281.25 - 303.75	WNW	0	0	0	0	1	1	4	0	2	0	0	8
303.75 - 326.25	NW	0	0	0	0	0	2	4	2	13	0	0	21
326.25 - 348.75	NNW	0	0	0	0	1	1	1	2	6	1	0	12

Total 71

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.094	0.047	0.000	0.047	0.000	0.000	0.19
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.094	0.047	0.047	0.141	0.000	0.000	0.33
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	0.141	0.000	0.000	0.000	0.000	0.14
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	0.047	0.047	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	0.047	0.094	0.000	0.000	0.000	0.19
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.141	0.188	0.141	0.000	0.000	0.000	0.47
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.047	0.047	0.188	0.000	0.094	0.000	0.000	0.38
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.094	0.188	0.094	0.611	0.000	0.000	0.99
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.047	0.047	0.047	0.094	0.282	0.047	0.000	0.56

Total 3.34

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	1	2	1	0	1	0	0	5
11.25 - 33.75	NNE	0	0	0	0	0	1	4	3	1	0	0	9
33.75 - 56.25	NE	0	0	0	0	0	1	0	0	0	0	0	1
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	1	2	1	0	0	3	7
146.25 - 168.75	SSE	0	0	0	0	1	3	2	1	0	0	0	7
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	1	1	0	0	1	0	0	3
236.25 - 258.75	WSW	0	0	0	1	1	1	2	1	0	0	0	6
258.75 - 281.25	W	0	0	0	0	0	5	7	8	0	0	0	20
281.25 - 303.75	WNW	0	0	0	0	1	3	3	1	4	1	0	13
303.75 - 326.25	NW	0	0	0	0	1	6	5	5	9	4	0	30
326.25 - 348.75	NNW	0	0	0	0	2	1	2	1	4	2	0	12

Total 113

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.047	0.094	0.047	0.000	0.047	0.000	0.000	0.24
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.047	0.188	0.141	0.047	0.000	0.000	0.42
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.05
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	0.047	0.094	0.047	0.000	0.000	0.141	0.33
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.047	0.141	0.094	0.047	0.000	0.000	0.000	0.33
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	0.047	0.047	0.000	0.000	0.047	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.047	0.047	0.047	0.094	0.047	0.000	0.000	0.000	0.28
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.235	0.329	0.376	0.000	0.000	0.000	0.94
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.047	0.141	0.141	0.047	0.188	0.047	0.000	0.61
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.047	0.282	0.235	0.235	0.423	0.188	0.000	1.41
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.094	0.047	0.094	0.047	0.188	0.094	0.000	0.56

Total 5.32

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	1	3	4	13	13	11	8	10	0	0	63
11.25 - 33.75	NNE	0	0	2	5	10	14	36	15	10	0	0	92
33.75 - 56.25	NE	0	2	2	5	17	14	13	4	3	0	0	60
56.25 - 78.75	ENE	0	0	2	0	5	2	2	4	1	0	0	16
78.75 - 101.25	E	0	0	2	1	4	1	0	0	0	0	0	8
101.25 - 123.75	ESE	0	2	0	1	1	0	2	3	1	0	0	10
123.75 - 146.25	SE	0	1	0	1	4	5	11	1	5	0	4	32
146.25 - 168.75	SSE	0	1	0	4	8	9	17	14	8	0	0	61
168.75 - 191.25	S	0	0	2	5	14	13	12	6	15	3	0	70
191.25 - 213.75	SSW	0	2	1	3	11	3	7	5	4	1	0	37
213.75 - 236.25	SW	0	0	1	5	6	5	7	5	1	0	0	30
236.25 - 258.75	WSW	0	0	5	6	13	8	3	1	1	0	0	37
258.75 - 281.25	W	0	0	4	2	2	8	10	7	9	0	0	42
281.25 - 303.75	WNW	0	0	1	1	13	10	13	12	30	4	0	84
303.75 - 326.25	NW	0	0	1	4	12	11	15	35	61	36	2	177
326.25 - 348.75	NNW	0	0	5	6	11	17	19	20	23	1	0	102

Total 921

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.047	0.141	0.188	0.611	0.611	0.517	0.376	0.470	0.000	0.000	2.96
11.25 - 33.75	NNE	0.000	0.000	0.094	0.235	0.470	0.659	1.693	0.706	0.470	0.000	0.000	4.33
33.75 - 56.25	NE	0.000	0.094	0.094	0.235	0.800	0.659	0.611	0.188	0.141	0.000	0.000	2.82
56.25 - 78.75	ENE	0.000	0.000	0.094	0.000	0.235	0.094	0.094	0.188	0.047	0.000	0.000	0.75
78.75 - 101.25	E	0.000	0.000	0.094	0.047	0.188	0.047	0.000	0.000	0.000	0.000	0.000	0.38
101.25 - 123.75	ESE	0.000	0.094	0.000	0.047	0.047	0.000	0.094	0.141	0.047	0.000	0.000	0.47
123.75 - 146.25	SE	0.000	0.047	0.000	0.047	0.188	0.235	0.517	0.047	0.235	0.000	0.188	1.51
146.25 - 168.75	SSE	0.000	0.047	0.000	0.188	0.376	0.423	0.800	0.659	0.376	0.000	0.000	2.87
168.75 - 191.25	S	0.000	0.000	0.094	0.235	0.659	0.611	0.564	0.282	0.706	0.141	0.000	3.29
191.25 - 213.75	SSW	0.000	0.094	0.047	0.141	0.517	0.141	0.329	0.235	0.188	0.047	0.000	1.74
213.75 - 236.25	SW	0.000	0.000	0.047	0.235	0.282	0.235	0.329	0.235	0.047	0.000	0.000	1.41
236.25 - 258.75	WSW	0.000	0.000	0.235	0.282	0.611	0.376	0.141	0.047	0.047	0.000	0.000	1.74
258.75 - 281.25	W	0.000	0.000	0.188	0.094	0.094	0.376	0.470	0.329	0.423	0.000	0.000	1.98
281.25 - 303.75	WNW	0.000	0.000	0.047	0.047	0.611	0.470	0.611	0.564	1.411	0.188	0.000	3.95
303.75 - 326.25	NW	0.000	0.000	0.047	0.188	0.564	0.517	0.706	1.646	2.869	1.693	0.094	8.33
326.25 - 348.75	NNW	0.000	0.000	0.235	0.282	0.517	0.800	0.894	0.941	1.082	0.047	0.000	4.80

Total 43.32

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	3	10	7	22	4	0	0	0	46
11.25 - 33.75	NNE	0	0	2	5	20	18	3	1	0	0	0	49
33.75 - 56.25	NE	0	0	7	7	23	3	0	0	0	0	0	40
56.25 - 78.75	ENE	0	4	5	7	4	0	0	0	0	0	0	20
78.75 - 101.25	E	0	3	5	0	0	0	0	0	0	0	0	8
101.25 - 123.75	ESE	0	2	2	1	7	2	3	1	0	0	0	18
123.75 - 146.25	SE	0	0	1	5	5	10	11	3	0	0	0	35
146.25 - 168.75	SSE	0	1	5	1	12	10	3	3	1	0	0	36
168.75 - 191.25	S	0	0	6	2	5	8	3	5	4	1	0	34
191.25 - 213.75	SSW	0	1	2	5	6	7	10	1	0	0	0	32
213.75 - 236.25	SW	0	4	4	1	23	19	0	0	0	0	0	51
236.25 - 258.75	WSW	0	2	4	3	23	14	6	1	0	0	0	53
258.75 - 281.25	W	0	2	4	5	14	22	3	0	0	0	0	50
281.25 - 303.75	WNW	0	1	4	6	26	16	4	7	3	2	0	69
303.75 - 326.25	NW	0	2	7	6	31	16	24	6	2	1	0	95
326.25 - 348.75	NNW	0	1	1	3	22	20	17	7	3	0	0	74

Total 710

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.141	0.470	0.329	1.035	0.188	0.000	0.000	0.000	2.16
11.25 - 33.75	NNE	0.000	0.000	0.094	0.235	0.941	0.847	0.141	0.047	0.000	0.000	0.000	2.30
33.75 - 56.25	NE	0.000	0.000	0.329	0.329	1.082	0.141	0.000	0.000	0.000	0.000	0.000	1.88
56.25 - 78.75	ENE	0.000	0.188	0.235	0.329	0.188	0.000	0.000	0.000	0.000	0.000	0.000	0.94
78.75 - 101.25	E	0.000	0.141	0.235	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.38
101.25 - 123.75	ESE	0.000	0.094	0.094	0.047	0.329	0.094	0.141	0.047	0.000	0.000	0.000	0.85
123.75 - 146.25	SE	0.000	0.000	0.047	0.235	0.235	0.470	0.517	0.141	0.000	0.000	0.000	1.65
146.25 - 168.75	SSE	0.000	0.047	0.235	0.047	0.564	0.470	0.141	0.141	0.047	0.000	0.000	1.69
168.75 - 191.25	S	0.000	0.000	0.282	0.094	0.235	0.376	0.141	0.235	0.188	0.047	0.000	1.60
191.25 - 213.75	SSW	0.000	0.047	0.094	0.235	0.282	0.329	0.470	0.047	0.000	0.000	0.000	1.51
213.75 - 236.25	SW	0.000	0.188	0.188	0.047	1.082	0.894	0.000	0.000	0.000	0.000	0.000	2.40
236.25 - 258.75	WSW	0.000	0.094	0.188	0.141	1.082	0.659	0.282	0.047	0.000	0.000	0.000	2.49
258.75 - 281.25	W	0.000	0.094	0.188	0.235	0.659	1.035	0.141	0.000	0.000	0.000	0.000	2.35
281.25 - 303.75	WNW	0.000	0.047	0.188	0.282	1.223	0.753	0.188	0.329	0.141	0.094	0.000	3.25
303.75 - 326.25	NW	0.000	0.094	0.329	0.282	1.458	0.753	1.129	0.282	0.094	0.047	0.000	4.47
326.25 - 348.75	NNW	0.000	0.047	0.047	0.141	1.035	0.941	0.800	0.329	0.141	0.000	0.000	3.48

Total 33.40

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	1	2	2	2	3	0	0	0	0	10	
11.25 - 33.75	NNE	0	1	0	4	1	3	0	0	0	0	9	
33.75 - 56.25	NE	0	1	2	4	7	1	0	0	0	0	15	
56.25 - 78.75	ENE	0	2	0	2	0	0	0	0	0	0	4	
78.75 - 101.25	E	0	1	3	3	1	0	0	0	0	0	8	
101.25 - 123.75	ESE	0	1	7	4	0	0	0	0	0	0	12	
123.75 - 146.25	SE	0	2	1	3	6	6	7	0	1	0	26	
146.25 - 168.75	SSE	0	0	4	2	2	2	2	1	0	0	13	
168.75 - 191.25	S	0	0	4	2	4	3	0	0	1	2	16	
191.25 - 213.75	SSW	0	1	1	1	5	1	0	0	2	0	11	
213.75 - 236.25	SW	0	0	0	0	6	1	0	0	0	0	7	
236.25 - 258.75	WSW	0	0	4	2	7	2	0	0	1	0	16	
258.75 - 281.25	W	0	1	1	1	1	1	0	0	0	0	5	
281.25 - 303.75	WNW	0	5	2	1	1	0	0	0	0	0	9	
303.75 - 326.25	NW	0	0	1	3	9	3	1	0	0	0	17	
326.25 - 348.75	NNW	0	2	1	1	2	0	0	0	0	0	6	

Total 184

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.047	0.094	0.094	0.094	0.141	0.000	0.000	0.000	0.000	0.000	0.47
11.25 - 33.75	NNE	0.000	0.047	0.000	0.188	0.047	0.141	0.000	0.000	0.000	0.000	0.000	0.42
33.75 - 56.25	NE	0.000	0.047	0.094	0.188	0.329	0.047	0.000	0.000	0.000	0.000	0.000	0.71
56.25 - 78.75	ENE	0.000	0.094	0.000	0.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.19
78.75 - 101.25	E	0.000	0.047	0.141	0.141	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.38
101.25 - 123.75	ESE	0.000	0.047	0.329	0.188	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.56
123.75 - 146.25	SE	0.000	0.094	0.047	0.141	0.282	0.282	0.329	0.000	0.047	0.000	0.000	1.22
146.25 - 168.75	SSE	0.000	0.000	0.188	0.094	0.094	0.094	0.094	0.047	0.000	0.000	0.000	0.61
168.75 - 191.25	S	0.000	0.000	0.188	0.094	0.188	0.141	0.000	0.000	0.047	0.094	0.000	0.75
191.25 - 213.75	SSW	0.000	0.047	0.047	0.047	0.235	0.047	0.000	0.000	0.094	0.000	0.000	0.52
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.282	0.047	0.000	0.000	0.000	0.000	0.000	0.33
236.25 - 258.75	WSW	0.000	0.000	0.188	0.094	0.329	0.094	0.000	0.000	0.047	0.000	0.000	0.75
258.75 - 281.25	W	0.000	0.047	0.047	0.047	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.24
281.25 - 303.75	WNW	0.000	0.235	0.094	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.42
303.75 - 326.25	NW	0.000	0.000	0.047	0.141	0.423	0.141	0.047	0.000	0.000	0.000	0.000	0.80
326.25 - 348.75	NNW	0.000	0.094	0.047	0.047	0.094	0.000	0.000	0.000	0.000	0.000	0.000	0.28

Total 8.65

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	2	1	0	0	0	0	0	0	3	
11.25 - 33.75	NNE	0	0	3	4	1	0	0	0	0	0	8	
33.75 - 56.25	NE	0	1	0	0	2	0	0	0	0	0	3	
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	
78.75 - 101.25	E	0	0	3	1	0	0	0	0	0	0	4	
101.25 - 123.75	ESE	0	0	1	4	0	1	0	0	0	0	6	
123.75 - 146.25	SE	0	1	3	9	11	5	3	2	0	0	34	
146.25 - 168.75	SSE	0	0	1	4	5	1	0	1	0	0	12	
168.75 - 191.25	S	0	1	2	2	3	2	0	0	0	1	11	
191.25 - 213.75	SSW	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	1	
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	
258.75 - 281.25	W	0	0	0	1	0	0	0	0	0	0	1	
281.25 - 303.75	WNW	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	
326.25 - 348.75	NNW	0	0	0	0	1	0	0	0	0	0	1	

Total 84

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.094	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.14	
11.25 - 33.75	NNE	0.000	0.000	0.141	0.188	0.047	0.000	0.000	0.000	0.000	0.000	0.38	
33.75 - 56.25	NE	0.000	0.047	0.000	0.000	0.094	0.000	0.000	0.000	0.000	0.000	0.14	
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	0.00	
78.75 - 101.25	E	0.000	0.000	0.141	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.19	
101.25 - 123.75	ESE	0.000	0.000	0.047	0.188	0.000	0.047	0.000	0.000	0.000	0.000	0.28	
123.75 - 146.25	SE	0.000	0.047	0.141	0.423	0.517	0.235	0.141	0.094	0.000	0.000	1.60	
146.25 - 168.75	SSE	0.000	0.000	0.047	0.188	0.235	0.047	0.000	0.047	0.000	0.000	0.56	
168.75 - 191.25	S	0.000	0.047	0.094	0.094	0.141	0.094	0.000	0.000	0.000	0.047	0.52	
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	0.00	
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.047	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	0.00	
258.75 - 281.25	W	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.05	
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	0.00	
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	0.00	
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.05	

Total 3.95

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2015 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	7	10	26	27	35	13	12	0	0	132
11.25 - 33.75	NNE	0	1	7	18	32	38	45	20	17	0	0	178
33.75 - 56.25	NE	0	4	11	16	49	19	13	4	3	0	0	119
56.25 - 78.75	ENE	0	6	7	9	9	2	2	4	1	0	0	40
78.75 - 101.25	E	0	4	13	5	5	1	0	0	0	0	0	28
101.25 - 123.75	ESE	0	5	10	10	8	3	5	4	1	0	0	46
123.75 - 146.25	SE	0	4	5	18	26	27	38	8	6	0	7	139
146.25 - 168.75	SSE	0	2	10	11	28	25	24	20	9	0	0	129
168.75 - 191.25	S	0	1	14	11	26	26	15	11	20	7	0	131
191.25 - 213.75	SSW	0	4	4	9	22	11	17	6	6	1	0	80
213.75 - 236.25	SW	0	4	5	6	37	26	8	6	2	0	0	94
236.25 - 258.75	WSW	0	2	13	12	44	26	13	6	3	0	0	119
258.75 - 281.25	W	0	3	9	9	17	39	24	20	9	0	0	130
281.25 - 303.75	WNW	0	6	7	8	42	31	24	20	39	7	0	184
303.75 - 326.25	NW	0	2	9	13	53	38	49	54	98	42	2	360
326.25 - 348.75	NNW	0	3	7	10	39	39	40	36	37	6	0	217

Total 2,126

MISSING HOURS: 34
 JOINT DATA RECOVERY: 98.4%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - MARCH 2014 (Q1)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.094	0.329	0.470	1.223	1.270	1.646	0.611	0.564	0.000	0.000	6.21
11.25 - 33.75	NNE	0.000	0.047	0.329	0.847	1.505	1.787	2.117	0.941	0.800	0.000	0.000	8.37
33.75 - 56.25	NE	0.000	0.188	0.517	0.753	2.305	0.894	0.611	0.188	0.141	0.000	0.000	5.60
56.25 - 78.75	ENE	0.000	0.282	0.329	0.423	0.423	0.094	0.094	0.188	0.047	0.000	0.000	1.88
78.75 - 101.25	E	0.000	0.188	0.611	0.235	0.235	0.047	0.000	0.000	0.000	0.000	0.000	1.32
101.25 - 123.75	ESE	0.000	0.235	0.470	0.470	0.376	0.141	0.235	0.188	0.047	0.000	0.000	2.16
123.75 - 146.25	SE	0.000	0.188	0.235	0.847	1.223	1.270	1.787	0.376	0.282	0.000	0.329	6.54
146.25 - 168.75	SSE	0.000	0.094	0.470	0.517	1.317	1.176	1.129	0.941	0.423	0.000	0.000	6.07
168.75 - 191.25	S	0.000	0.047	0.659	0.517	1.223	1.223	0.706	0.517	0.941	0.329	0.000	6.16
191.25 - 213.75	SSW	0.000	0.188	0.188	0.423	1.035	0.517	0.800	0.282	0.282	0.047	0.000	3.76
213.75 - 236.25	SW	0.000	0.188	0.235	0.282	1.740	1.223	0.376	0.282	0.094	0.000	0.000	4.42
236.25 - 258.75	WSW	0.000	0.094	0.611	0.564	2.070	1.223	0.611	0.282	0.141	0.000	0.000	5.60
258.75 - 281.25	W	0.000	0.141	0.423	0.423	0.800	1.834	1.129	0.941	0.423	0.000	0.000	6.11
281.25 - 303.75	WNW	0.000	0.282	0.329	0.376	1.976	1.458	1.129	0.941	1.834	0.329	0.000	8.65
303.75 - 326.25	NW	0.000	0.094	0.423	0.611	2.493	1.787	2.305	2.540	4.610	1.976	0.094	16.93
326.25 - 348.75	NNW	0.000	0.141	0.329	0.470	1.834	1.834	1.881	1.693	1.740	0.282	0.000	10.21

Total 100.00

MISSING HOURS: 34
 JOINT DATA RECOVERY: 98.4%

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

April – June 2015

Page Intentionally Left Blank

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1E -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	1	2	0	0	0	3	
11.25 - 33.75	NNE	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	
56.25 - 78.75	ENE	0	0	0	0	0	3	0	0	0	0	3	
78.75 - 101.25	E	0	0	0	0	0	0	1	0	0	0	1	
101.25 - 123.75	ESE	0	0	0	0	0	0	3	0	0	0	3	
123.75 - 146.25	SE	0	0	0	0	0	0	0	0	4	3	7	
146.25 - 168.75	SSE	0	0	0	0	0	0	0	1	5	0	6	
168.75 - 191.25	S	0	0	0	0	0	0	1	0	0	0	1	
191.25 - 213.75	SSW	0	0	0	0	0	1	0	1	0	0	2	
213.75 - 236.25	SW	0	0	0	0	0	0	1	0	0	0	1	
236.25 - 258.75	WSW	0	0	0	0	0	3	2	2	0	0	7	
258.75 - 281.25	W	0	0	0	0	0	1	0	3	4	0	8	
281.25 - 303.75	WNW	0	0	0	0	0	1	0	0	2	0	3	
303.75 - 326.25	NW	0	0	0	0	0	0	5	6	17	4	32	
326.25 - 348.75	NNW	0	0	0	0	0	2	0	3	3	0	8	

Total 85

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1E -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.046	0.093	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	0.000	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	0.139	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	0.000	0.000	0.046	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	0.139	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	0.000	0.000	0.000	0.185	0.139	0.000	0.32
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.231	0.000	0.000	0.28
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.046	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	0.046	0.000	0.046	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	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	0.139	0.093	0.093	0.000	0.000	0.000	0.32
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.139	0.185	0.000	0.000	0.37
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.093	0.000	0.000	0.14
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.231	0.278	0.787	0.185	0.000	1.48
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.139	0.139	0.000	0.000	0.37

Total 3.93

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	1	1	0	1	0	0	0	3
11.25 - 33.75	NNE	0	0	0	0	1	2	0	0	0	0	0	3
33.75 - 56.25	NE	0	0	0	0	1	3	2	0	0	0	0	6
56.25 - 78.75	ENE	0	0	0	0	0	1	1	0	0	0	0	2
78.75 - 101.25	E	0	0	0	0	0	1	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	0	0	2	1	1	0	4
146.25 - 168.75	SSE	0	0	0	0	0	1	0	1	1	0	0	3
168.75 - 191.25	S	0	0	0	0	1	0	0	0	0	0	0	1
191.25 - 213.75	SSW	0	0	0	0	2	0	0	0	0	0	0	2
213.75 - 236.25	SW	0	0	0	0	1	1	0	0	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	2	0	0	3	0	0	0	5
258.75 - 281.25	W	0	0	0	0	0	3	3	1	4	0	0	11
281.25 - 303.75	WNW	0	0	0	0	2	0	1	0	1	0	0	4
303.75 - 326.25	NW	0	0	0	0	1	0	0	7	3	2	0	13
326.25 - 348.75	NNW	0	0	0	0	0	2	3	0	0	0	0	5

Total 66

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.046	0.000	0.000	0.000	0.14
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.000	0.000	0.14
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.139	0.093	0.000	0.000	0.000	0.000	0.28
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.046	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	0.046	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	0.000	0.000	0.093	0.046	0.046	0.000	0.19
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.046	0.000	0.000	0.14
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.046	0.046	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	0.093	0.000	0.000	0.139	0.000	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.139	0.139	0.046	0.185	0.000	0.000	0.51
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.093	0.000	0.046	0.000	0.046	0.000	0.000	0.19
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.324	0.139	0.093	0.000	0.60
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.093	0.139	0.000	0.000	0.000	0.000	0.23

Total 3.05

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	1	1	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	1	3	1	1	0	0	0	6
33.75 - 56.25	NE	0	0	0	0	2	2	0	0	0	0	0	4
56.25 - 78.75	ENE	0	0	0	0	2	4	1	0	0	0	0	7
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	1	0	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	0	2	4	1	2	2	0	11
146.25 - 168.75	SSE	0	0	1	0	0	3	1	0	1	0	0	6
168.75 - 191.25	S	0	0	0	0	2	2	0	0	0	0	0	4
191.25 - 213.75	SSW	0	0	0	0	3	3	0	2	0	0	0	8
213.75 - 236.25	SW	0	0	0	1	2	2	0	1	0	0	0	6
236.25 - 258.75	WSW	0	0	0	0	5	0	1	3	2	0	0	11
258.75 - 281.25	W	0	0	0	1	0	5	3	3	4	0	0	16
281.25 - 303.75	WNW	0	0	0	0	3	2	0	2	1	0	0	8
303.75 - 326.25	NW	0	0	0	0	1	1	5	6	5	2	0	20
326.25 - 348.75	NNW	0	0	0	0	2	3	2	2	1	0	0	10

Total 120

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.046	0.046	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	0.046	0.139	0.046	0.046	0.000	0.000	0.000	0.28
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.19
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.093	0.185	0.046	0.000	0.000	0.000	0.000	0.32
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	0.046	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	0.000	0.000	0.093	0.185	0.046	0.093	0.093	0.000	0.51
146.25 - 168.75	SSE	0.000	0.000	0.046	0.000	0.000	0.139	0.046	0.000	0.046	0.000	0.000	0.28
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.19
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.139	0.139	0.000	0.093	0.000	0.000	0.000	0.37
213.75 - 236.25	SW	0.000	0.000	0.000	0.046	0.093	0.093	0.000	0.046	0.000	0.000	0.000	0.28
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.231	0.000	0.046	0.139	0.093	0.000	0.000	0.51
258.75 - 281.25	W	0.000	0.000	0.000	0.046	0.000	0.231	0.139	0.139	0.185	0.000	0.000	0.74
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.139	0.093	0.000	0.093	0.046	0.000	0.000	0.37
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.046	0.231	0.278	0.231	0.093	0.000	0.93
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.093	0.139	0.093	0.093	0.046	0.000	0.000	0.46

Total 5.55

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	0	1	4	0	2	3	1	0	0	11
11.25 - 33.75	NNE	0	0	2	6	12	10	14	3	0	0	0	47
33.75 - 56.25	NE	0	1	2	7	21	32	24	7	0	0	0	94
56.25 - 78.75	ENE	0	0	2	7	20	23	11	2	2	0	0	67
78.75 - 101.25	E	0	2	2	4	22	8	5	6	0	0	0	49
101.25 - 123.75	ESE	0	0	2	2	7	8	6	3	1	0	0	29
123.75 - 146.25	SE	0	0	1	2	15	16	12	16	31	5	0	98
146.25 - 168.75	SSE	0	0	2	1	21	12	10	12	20	7	1	86
168.75 - 191.25	S	0	1	2	3	12	25	16	13	15	4	0	91
191.25 - 213.75	SSW	0	0	3	6	21	8	9	6	5	2	0	60
213.75 - 236.25	SW	0	0	2	3	16	15	11	0	4	0	0	51
236.25 - 258.75	WSW	0	0	1	3	11	18	6	5	5	0	0	49
258.75 - 281.25	W	0	1	1	3	7	12	9	7	6	0	0	46
281.25 - 303.75	WNW	0	0	2	4	3	11	12	5	6	0	0	43
303.75 - 326.25	NW	0	0	1	3	9	22	22	14	7	1	0	79
326.25 - 348.75	NNW	0	0	0	5	5	5	4	2	1	0	0	22

Total 922

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.000	0.046	0.185	0.000	0.093	0.139	0.046	0.000	0.000	0.51
11.25 - 33.75	NNE	0.000	0.000	0.093	0.278	0.555	0.463	0.648	0.139	0.000	0.000	0.000	2.17
33.75 - 56.25	NE	0.000	0.046	0.093	0.324	0.972	1.481	1.111	0.324	0.000	0.000	0.000	4.35
56.25 - 78.75	ENE	0.000	0.000	0.093	0.324	0.925	1.064	0.509	0.093	0.093	0.000	0.000	3.10
78.75 - 101.25	E	0.000	0.093	0.093	0.185	1.018	0.370	0.231	0.278	0.000	0.000	0.000	2.27
101.25 - 123.75	ESE	0.000	0.000	0.093	0.093	0.324	0.370	0.278	0.139	0.046	0.000	0.000	1.34
123.75 - 146.25	SE	0.000	0.000	0.046	0.093	0.694	0.740	0.555	0.740	1.435	0.231	0.000	4.53
146.25 - 168.75	SSE	0.000	0.000	0.093	0.046	0.972	0.555	0.463	0.555	0.925	0.324	0.046	3.98
168.75 - 191.25	S	0.000	0.046	0.093	0.139	0.555	1.157	0.740	0.602	0.694	0.185	0.000	4.21
191.25 - 213.75	SSW	0.000	0.000	0.139	0.278	0.972	0.370	0.416	0.278	0.231	0.093	0.000	2.78
213.75 - 236.25	SW	0.000	0.000	0.093	0.139	0.740	0.694	0.509	0.000	0.185	0.000	0.000	2.36
236.25 - 258.75	WSW	0.000	0.000	0.046	0.139	0.509	0.833	0.278	0.231	0.231	0.000	0.000	2.27
258.75 - 281.25	W	0.000	0.046	0.046	0.139	0.324	0.555	0.416	0.324	0.278	0.000	0.000	2.13
281.25 - 303.75	WNW	0.000	0.000	0.093	0.185	0.139	0.509	0.555	0.231	0.278	0.000	0.000	1.99
303.75 - 326.25	NW	0.000	0.000	0.046	0.139	0.416	1.018	1.018	0.648	0.324	0.046	0.000	3.66
326.25 - 348.75	NNW	0.000	0.000	0.000	0.231	0.231	0.231	0.185	0.093	0.046	0.000	0.000	1.02

Total 42.67

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	1	5	9	4	2	0	0	0	0	23
11.25 - 33.75	NNE	0	1	1	9	8	1	0	0	1	0	0	21
33.75 - 56.25	NE	0	1	6	8	11	1	2	1	0	0	0	30
56.25 - 78.75	ENE	0	1	3	5	7	1	1	0	0	0	0	18
78.75 - 101.25	E	0	3	6	4	5	1	1	2	1	0	0	23
101.25 - 123.75	ESE	0	3	2	4	9	4	0	4	0	1	1	28
123.75 - 146.25	SE	0	2	2	9	5	18	22	19	13	2	0	92
146.25 - 168.75	SSE	0	0	0	4	10	18	13	4	6	0	0	55
168.75 - 191.25	S	0	1	1	5	7	6	7	10	0	0	0	37
191.25 - 213.75	SSW	0	0	1	4	14	18	12	14	13	1	0	77
213.75 - 236.25	SW	0	0	4	12	21	13	14	7	2	1	0	74
236.25 - 258.75	WSW	0	2	3	4	14	9	0	1	0	0	0	33
258.75 - 281.25	W	0	1	5	4	10	9	4	2	1	0	0	36
281.25 - 303.75	WNW	0	1	4	5	12	12	3	3	0	0	0	40
303.75 - 326.25	NW	0	0	2	2	19	18	13	9	4	1	0	68
326.25 - 348.75	NNW	0	1	3	6	10	11	6	5	1	0	0	43

Total 698

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.093	0.046	0.231	0.416	0.185	0.093	0.000	0.000	0.000	0.000	1.06
11.25 - 33.75	NNE	0.000	0.046	0.046	0.416	0.370	0.046	0.000	0.000	0.046	0.000	0.000	0.97
33.75 - 56.25	NE	0.000	0.046	0.278	0.370	0.509	0.046	0.093	0.046	0.000	0.000	0.000	1.39
56.25 - 78.75	ENE	0.000	0.046	0.139	0.231	0.324	0.046	0.046	0.000	0.000	0.000	0.000	0.83
78.75 - 101.25	E	0.000	0.139	0.278	0.185	0.231	0.046	0.046	0.093	0.046	0.000	0.000	1.06
101.25 - 123.75	ESE	0.000	0.139	0.093	0.185	0.416	0.185	0.000	0.185	0.000	0.046	0.046	1.30
123.75 - 146.25	SE	0.000	0.093	0.093	0.416	0.231	0.833	1.018	0.879	0.602	0.093	0.000	4.26
146.25 - 168.75	SSE	0.000	0.000	0.000	0.185	0.463	0.833	0.602	0.185	0.278	0.000	0.000	2.55
168.75 - 191.25	S	0.000	0.046	0.046	0.231	0.324	0.278	0.324	0.463	0.000	0.000	0.000	1.71
191.25 - 213.75	SSW	0.000	0.000	0.046	0.185	0.648	0.833	0.555	0.648	0.602	0.046	0.000	3.56
213.75 - 236.25	SW	0.000	0.000	0.185	0.555	0.972	0.602	0.648	0.324	0.093	0.046	0.000	3.42
236.25 - 258.75	WSW	0.000	0.093	0.139	0.185	0.648	0.416	0.000	0.046	0.000	0.000	0.000	1.53
258.75 - 281.25	W	0.000	0.046	0.231	0.185	0.463	0.416	0.185	0.093	0.046	0.000	0.000	1.67
281.25 - 303.75	WNW	0.000	0.046	0.185	0.231	0.555	0.555	0.139	0.139	0.000	0.000	0.000	1.85
303.75 - 326.25	NW	0.000	0.000	0.093	0.093	0.879	0.833	0.602	0.416	0.185	0.046	0.000	3.15
326.25 - 348.75	NNW	0.000	0.046	0.139	0.278	0.463	0.509	0.278	0.231	0.046	0.000	0.000	1.99

Total 32.30

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	1	1	7	4	0	0	0	0	0	13
11.25 - 33.75	NNE	0	0	0	2	1	3	0	0	0	0	0	6
33.75 - 56.25	NE	0	1	0	1	2	2	0	0	0	0	0	6
56.25 - 78.75	ENE	0	1	1	0	2	0	0	0	0	0	0	4
78.75 - 101.25	E	0	3	3	1	0	0	0	0	0	0	0	7
101.25 - 123.75	ESE	0	1	1	0	2	0	0	0	0	0	0	4
123.75 - 146.25	SE	0	0	3	4	7	8	4	10	6	0	0	42
146.25 - 168.75	SSE	0	2	1	3	6	6	8	1	2	0	0	29
168.75 - 191.25	S	0	1	1	4	4	5	4	5	3	0	0	27
191.25 - 213.75	SSW	0	0	0	4	4	2	4	2	1	0	0	17
213.75 - 236.25	SW	0	0	1	3	3	3	2	0	1	0	0	13
236.25 - 258.75	WSW	0	0	0	2	3	2	0	1	1	0	0	9
258.75 - 281.25	W	0	0	1	1	1	0	0	0	0	0	0	3
281.25 - 303.75	WNW	0	0	1	0	8	0	0	0	0	0	0	9
303.75 - 326.25	NW	0	0	2	2	10	2	0	0	0	0	0	16
326.25 - 348.75	NNW	0	0	0	1	6	5	1	0	0	0	0	13

Total 218

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.046	0.046	0.324	0.185	0.000	0.000	0.000	0.000	0.000	0.60
11.25 - 33.75	NNE	0.000	0.000	0.000	0.093	0.046	0.139	0.000	0.000	0.000	0.000	0.000	0.28
33.75 - 56.25	NE	0.000	0.046	0.000	0.046	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.28
56.25 - 78.75	ENE	0.000	0.046	0.046	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.19
78.75 - 101.25	E	0.000	0.139	0.139	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.32
101.25 - 123.75	ESE	0.000	0.046	0.046	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.19
123.75 - 146.25	SE	0.000	0.000	0.139	0.185	0.324	0.370	0.185	0.463	0.278	0.000	0.000	1.94
146.25 - 168.75	SSE	0.000	0.093	0.046	0.139	0.278	0.278	0.370	0.046	0.093	0.000	0.000	1.34
168.75 - 191.25	S	0.000	0.046	0.046	0.185	0.185	0.231	0.185	0.231	0.139	0.000	0.000	1.25
191.25 - 213.75	SSW	0.000	0.000	0.000	0.185	0.185	0.093	0.185	0.093	0.046	0.000	0.000	0.79
213.75 - 236.25	SW	0.000	0.000	0.046	0.139	0.139	0.139	0.093	0.000	0.046	0.000	0.000	0.60
236.25 - 258.75	WSW	0.000	0.000	0.000	0.093	0.139	0.093	0.000	0.046	0.046	0.000	0.000	0.42
258.75 - 281.25	W	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.046	0.000	0.370	0.000	0.000	0.000	0.000	0.000	0.000	0.42
303.75 - 326.25	NW	0.000	0.000	0.093	0.093	0.463	0.093	0.000	0.000	0.000	0.000	0.000	0.74
326.25 - 348.75	NNW	0.000	0.000	0.000	0.046	0.278	0.231	0.046	0.000	0.000	0.000	0.000	0.60

Total 10.09

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
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	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	1	2	9	5	5	6	8	0	0	36
146.25 - 168.75	SSE	0	0	1	1	3	2	0	2	0	0	0	9
168.75 - 191.25	S	0	0	1	2	0	0	0	0	0	0	0	3
191.25 - 213.75	SSW	0	0	1	0	0	1	1	0	0	0	0	3
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	1	0	0	0	0	0	0	0	0	0	1
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 52

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
(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	
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	0.000	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	0.046	0.093	0.416	0.231	0.231	0.278	0.370	0.000	0.000	1.67
146.25 - 168.75	SSE	0.000	0.000	0.046	0.046	0.139	0.093	0.000	0.093	0.000	0.000	0.000	0.42
168.75 - 191.25	S	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.14
191.25 - 213.75	SSW	0.000	0.000	0.046	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.14
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	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
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 2.41

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	2	2	7	22	11	6	4	1	0	0	55
11.25 - 33.75	NNE	0	1	3	17	23	19	15	4	1	0	0	83
33.75 - 56.25	NE	0	3	8	16	37	40	28	8	0	0	0	140
56.25 - 78.75	ENE	0	2	6	12	31	32	14	2	2	0	0	101
78.75 - 101.25	E	0	8	11	9	27	10	8	8	1	0	0	82
101.25 - 123.75	ESE	0	4	5	6	19	12	9	7	1	1	1	65
123.75 - 146.25	SE	0	2	7	17	36	49	47	54	65	13	0	290
146.25 - 168.75	SSE	0	2	5	9	40	42	32	21	35	7	1	194
168.75 - 191.25	S	0	3	5	14	26	38	28	28	18	4	0	164
191.25 - 213.75	SSW	0	0	5	14	44	33	26	25	19	3	0	169
213.75 - 236.25	SW	0	0	7	19	43	34	28	8	7	1	0	147
236.25 - 258.75	WSW	0	2	4	9	35	32	9	15	8	0	0	114
258.75 - 281.25	W	0	2	7	9	18	30	19	16	19	0	0	120
281.25 - 303.75	WNW	0	1	7	9	28	26	16	10	10	0	0	107
303.75 - 326.25	NW	0	1	5	7	40	43	45	42	36	10	0	229
326.25 - 348.75	NNW	0	1	3	12	23	28	16	12	6	0	0	101

Total 2,161

MISSING HOURS: 23
 JOINT DATA RECOVERY: 98.9%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 APRIL - JUNE 2015 (Q2)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.093	0.093	0.324	1.018	0.509	0.278	0.185	0.046	0.000	0.000	2.55
11.25 - 33.75	NNE	0.000	0.046	0.139	0.787	1.064	0.879	0.694	0.185	0.046	0.000	0.000	3.84
33.75 - 56.25	NE	0.000	0.139	0.370	0.740	1.712	1.851	1.296	0.370	0.000	0.000	0.000	6.48
56.25 - 78.75	ENE	0.000	0.093	0.278	0.555	1.435	1.481	0.648	0.093	0.093	0.000	0.000	4.67
78.75 - 101.25	E	0.000	0.370	0.509	0.416	1.249	0.463	0.370	0.370	0.046	0.000	0.000	3.79
101.25 - 123.75	ESE	0.000	0.185	0.231	0.278	0.879	0.555	0.416	0.324	0.046	0.046	0.046	3.01
123.75 - 146.25	SE	0.000	0.093	0.324	0.787	1.666	2.267	2.175	2.499	3.008	0.602	0.000	13.42
146.25 - 168.75	SSE	0.000	0.093	0.231	0.416	1.851	1.944	1.481	0.972	1.620	0.324	0.046	8.98
168.75 - 191.25	S	0.000	0.139	0.231	0.648	1.203	1.758	1.296	1.296	0.833	0.185	0.000	7.59
191.25 - 213.75	SSW	0.000	0.000	0.231	0.648	2.036	1.527	1.203	1.157	0.879	0.139	0.000	7.82
213.75 - 236.25	SW	0.000	0.000	0.324	0.879	1.990	1.573	1.296	0.370	0.324	0.046	0.000	6.80
236.25 - 258.75	WSW	0.000	0.093	0.185	0.416	1.620	1.481	0.416	0.694	0.370	0.000	0.000	5.28
258.75 - 281.25	W	0.000	0.093	0.324	0.416	0.833	1.388	0.879	0.740	0.879	0.000	0.000	5.55
281.25 - 303.75	WNW	0.000	0.046	0.324	0.416	1.296	1.203	0.740	0.463	0.463	0.000	0.000	4.95
303.75 - 326.25	NW	0.000	0.046	0.231	0.324	1.851	1.990	2.082	1.944	1.666	0.463	0.000	10.60
326.25 - 348.75	NNW	0.000	0.046	0.139	0.555	1.064	1.296	0.740	0.555	0.278	0.000	0.000	4.67

Total 100.00

MISSING HOURS: 23
 JOINT DATA RECOVERY: 98.9%

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 2015

Page Intentionally Left Blank

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
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	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	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	1	3	2	0	0	0	6
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	1	0	0	0	0	1
281.25 - 303.75	WNW	0	0	0	0	0	0	0	2	0	0	0	2
303.75 - 326.25	NW	0	0	0	0	0	0	0	2	0	0	0	2
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 13

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
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	0.000	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	0.046	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	0.137	0.091	0.000	0.000	0.000	0.27
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	0.046	0.000	0.000	0.000	0.000	0.05
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.09
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.09
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 0.59

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
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	1	0	0	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	0	2	1	0	0	0	0	3
56.25 - 78.75	ENE	0	0	0	0	0	2	1	1	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	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	1	1	4	2	0	0	8
146.25 - 168.75	SSE	0	0	0	0	1	1	1	0	1	0	0	4
168.75 - 191.25	S	0	0	0	0	2	0	1	0	0	0	0	3
191.25 - 213.75	SSW	0	0	0	0	2	3	0	0	0	0	0	5
213.75 - 236.25	SW	0	0	0	0	1	0	2	0	0	0	0	3
236.25 - 258.75	WSW	0	0	0	0	1	0	1	1	0	0	0	3
258.75 - 281.25	W	0	0	0	0	0	0	0	3	0	0	0	3
281.25 - 303.75	WNW	0	0	0	0	0	0	0	1	0	0	0	1
303.75 - 326.25	NW	0	0	0	0	0	1	1	0	0	0	0	2
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 41

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
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	0.046	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	0.000	0.091	0.046	0.000	0.000	0.000	0.000	0.14
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.091	0.046	0.046	0.000	0.000	0.000	0.18
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	0.046	0.046	0.183	0.091	0.000	0.000	0.37
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.046	0.000	0.000	0.18
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.091	0.000	0.046	0.000	0.000	0.000	0.000	0.14
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.091	0.137	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	0.046	0.000	0.091	0.000	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.046	0.000	0.000	0.000	0.14
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.000	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.09
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 1.87

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	0	0	2	6	1	0	0	0	0	9
11.25 - 33.75	NNE	0	0	0	2	2	1	0	0	0	0	0	5
33.75 - 56.25	NE	0	0	0	0	1	3	5	1	0	0	0	10
56.25 - 78.75	ENE	0	0	0	1	1	2	1	1	0	0	0	6
78.75 - 101.25	E	0	0	0	0	0	1	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	3	2	2	7	0	0	14
146.25 - 168.75	SSE	0	0	0	0	6	5	2	0	0	0	0	13
168.75 - 191.25	S	0	0	0	1	6	1	0	1	0	0	0	9
191.25 - 213.75	SSW	0	0	0	2	6	3	2	2	0	0	0	15
213.75 - 236.25	SW	0	0	0	3	4	2	3	1	0	0	0	13
236.25 - 258.75	WSW	0	0	0	0	0	3	3	1	0	0	0	7
258.75 - 281.25	W	0	0	1	1	1	3	3	1	0	0	0	10
281.25 - 303.75	WNW	0	0	0	2	4	0	0	1	0	0	0	7
303.75 - 326.25	NW	0	0	0	1	2	1	1	0	0	0	0	5
326.25 - 348.75	NNW	0	0	0	3	4	9	5	3	0	0	0	24

Total 148

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.091	0.274	0.046	0.000	0.000	0.000	0.000	0.41
11.25 - 33.75	NNE	0.000	0.000	0.000	0.091	0.091	0.046	0.000	0.000	0.000	0.000	0.000	0.23
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.137	0.228	0.046	0.000	0.000	0.000	0.46
56.25 - 78.75	ENE	0.000	0.000	0.000	0.046	0.046	0.091	0.046	0.046	0.000	0.000	0.000	0.27
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.046	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	0.137	0.091	0.091	0.320	0.000	0.000	0.64
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.274	0.228	0.091	0.000	0.000	0.000	0.000	0.59
168.75 - 191.25	S	0.000	0.000	0.000	0.046	0.274	0.046	0.000	0.046	0.000	0.000	0.000	0.41
191.25 - 213.75	SSW	0.000	0.000	0.000	0.091	0.274	0.137	0.091	0.091	0.000	0.000	0.000	0.69
213.75 - 236.25	SW	0.000	0.000	0.000	0.137	0.183	0.091	0.137	0.046	0.000	0.000	0.000	0.59
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.137	0.137	0.046	0.000	0.000	0.000	0.32
258.75 - 281.25	W	0.000	0.000	0.046	0.046	0.046	0.137	0.137	0.046	0.000	0.000	0.000	0.46
281.25 - 303.75	WNW	0.000	0.000	0.000	0.091	0.183	0.000	0.000	0.046	0.000	0.000	0.000	0.32
303.75 - 326.25	NW	0.000	0.000	0.000	0.046	0.091	0.046	0.046	0.000	0.000	0.000	0.000	0.23
326.25 - 348.75	NNW	0.000	0.000	0.000	0.137	0.183	0.411	0.228	0.137	0.000	0.000	0.000	1.10

Total 6.76

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	4	2	4	20	18	13	9	0	0	0	70
11.25 - 33.75	NNE	0	0	2	2	11	1	3	3	5	0	0	27
33.75 - 56.25	NE	0	0	2	0	13	17	13	2	0	0	0	47
56.25 - 78.75	ENE	0	3	0	3	15	12	13	4	0	0	0	50
78.75 - 101.25	E	0	1	3	1	5	1	0	0	0	0	0	11
101.25 - 123.75	ESE	0	1	1	1	3	0	0	0	0	0	0	6
123.75 - 146.25	SE	0	0	0	0	6	9	17	24	44	8	0	108
146.25 - 168.75	SSE	0	0	2	11	20	27	39	35	47	8	0	189
168.75 - 191.25	S	0	2	2	17	31	30	25	22	7	2	0	138
191.25 - 213.75	SSW	0	1	5	13	32	27	20	3	2	0	0	103
213.75 - 236.25	SW	0	0	2	6	19	31	13	2	0	0	0	73
236.25 - 258.75	WSW	0	1	2	6	18	14	8	2	0	0	0	51
258.75 - 281.25	W	0	0	0	3	7	8	8	4	0	0	0	30
281.25 - 303.75	WNW	0	1	4	3	7	16	11	5	0	0	0	47
303.75 - 326.25	NW	0	2	2	1	14	14	9	2	0	0	0	44
326.25 - 348.75	NNW	0	1	4	5	22	12	5	3	0	0	0	52

Total 1,046

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.183	0.091	0.183	0.914	0.822	0.594	0.411	0.000	0.000	0.000	3.20
11.25 - 33.75	NNE	0.000	0.000	0.091	0.091	0.503	0.046	0.137	0.137	0.228	0.000	0.000	1.23
33.75 - 56.25	NE	0.000	0.000	0.091	0.000	0.594	0.777	0.594	0.091	0.000	0.000	0.000	2.15
56.25 - 78.75	ENE	0.000	0.137	0.000	0.137	0.685	0.548	0.594	0.183	0.000	0.000	0.000	2.28
78.75 - 101.25	E	0.000	0.046	0.137	0.046	0.228	0.046	0.000	0.000	0.000	0.000	0.000	0.50
101.25 - 123.75	ESE	0.000	0.046	0.046	0.046	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.27
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.274	0.411	0.777	1.096	2.010	0.365	0.000	4.93
146.25 - 168.75	SSE	0.000	0.000	0.091	0.503	0.914	1.233	1.782	1.599	2.147	0.365	0.000	8.63
168.75 - 191.25	S	0.000	0.091	0.091	0.777	1.416	1.370	1.142	1.005	0.320	0.091	0.000	6.30
191.25 - 213.75	SSW	0.000	0.046	0.228	0.594	1.462	1.233	0.914	0.137	0.091	0.000	0.000	4.71
213.75 - 236.25	SW	0.000	0.000	0.091	0.274	0.868	1.416	0.594	0.091	0.000	0.000	0.000	3.33
236.25 - 258.75	WSW	0.000	0.046	0.091	0.274	0.822	0.640	0.365	0.091	0.000	0.000	0.000	2.33
258.75 - 281.25	W	0.000	0.000	0.000	0.137	0.320	0.365	0.365	0.183	0.000	0.000	0.000	1.37
281.25 - 303.75	WNW	0.000	0.046	0.183	0.137	0.320	0.731	0.503	0.228	0.000	0.000	0.000	2.15
303.75 - 326.25	NW	0.000	0.091	0.091	0.046	0.640	0.640	0.411	0.091	0.000	0.000	0.000	2.01
326.25 - 348.75	NNW	0.000	0.046	0.183	0.228	1.005	0.548	0.228	0.137	0.000	0.000	0.000	2.38

Total 47.78

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	4	3	4	11	4	13	4	0	0	0	43
11.25 - 33.75	NNE	1	6	6	14	28	12	2	0	0	0	0	69
33.75 - 56.25	NE	0	1	8	5	26	29	5	1	0	0	0	75
56.25 - 78.75	ENE	0	5	6	4	11	3	0	0	0	0	0	29
78.75 - 101.25	E	0	1	8	9	11	0	0	0	0	0	0	29
101.25 - 123.75	ESE	0	1	1	2	15	7	2	1	0	0	0	29
123.75 - 146.25	SE	0	1	2	4	3	6	4	9	3	2	0	34
146.25 - 168.75	SSE	1	0	0	2	7	7	10	3	3	0	0	33
168.75 - 191.25	S	0	1	0	2	3	8	7	0	0	0	0	21
191.25 - 213.75	SSW	0	2	0	5	21	15	10	1	0	0	0	54
213.75 - 236.25	SW	0	1	2	6	27	22	1	0	0	0	0	59
236.25 - 258.75	WSW	0	1	0	8	28	13	2	0	0	0	0	52
258.75 - 281.25	W	0	3	7	10	12	4	3	2	0	1	0	42
281.25 - 303.75	WNW	0	3	11	15	17	2	3	2	1	0	0	54
303.75 - 326.25	NW	0	3	8	18	33	13	0	1	0	0	0	76
326.25 - 348.75	NNW	0	8	6	2	20	9	3	1	0	0	0	49

Total 748

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.183	0.137	0.183	0.503	0.183	0.594	0.183	0.000	0.000	0.000	1.96
11.25 - 33.75	NNE	0.046	0.274	0.274	0.640	1.279	0.548	0.091	0.000	0.000	0.000	0.000	3.15
33.75 - 56.25	NE	0.000	0.046	0.365	0.228	1.188	1.325	0.228	0.046	0.000	0.000	0.000	3.43
56.25 - 78.75	ENE	0.000	0.228	0.274	0.183	0.503	0.137	0.000	0.000	0.000	0.000	0.000	1.32
78.75 - 101.25	E	0.000	0.046	0.365	0.411	0.503	0.000	0.000	0.000	0.000	0.000	0.000	1.32
101.25 - 123.75	ESE	0.000	0.046	0.046	0.091	0.685	0.320	0.091	0.046	0.000	0.000	0.000	1.32
123.75 - 146.25	SE	0.000	0.046	0.091	0.183	0.137	0.274	0.183	0.411	0.137	0.091	0.000	1.55
146.25 - 168.75	SSE	0.046	0.000	0.000	0.091	0.320	0.320	0.457	0.137	0.137	0.000	0.000	1.51
168.75 - 191.25	S	0.000	0.046	0.000	0.091	0.137	0.365	0.320	0.000	0.000	0.000	0.000	0.96
191.25 - 213.75	SSW	0.000	0.091	0.000	0.228	0.959	0.685	0.457	0.046	0.000	0.000	0.000	2.47
213.75 - 236.25	SW	0.000	0.046	0.091	0.274	1.233	1.005	0.046	0.000	0.000	0.000	0.000	2.70
236.25 - 258.75	WSW	0.000	0.046	0.000	0.365	1.279	0.594	0.091	0.000	0.000	0.000	0.000	2.38
258.75 - 281.25	W	0.000	0.137	0.320	0.457	0.548	0.183	0.137	0.091	0.000	0.046	0.000	1.92
281.25 - 303.75	WNW	0.000	0.137	0.503	0.685	0.777	0.091	0.137	0.091	0.046	0.000	0.000	2.47
303.75 - 326.25	NW	0.000	0.137	0.365	0.822	1.508	0.594	0.000	0.046	0.000	0.000	0.000	3.47
326.25 - 348.75	NNW	0.000	0.365	0.274	0.091	0.914	0.411	0.137	0.046	0.000	0.000	0.000	2.24

Total 34.17

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	1	0	0	13	15	0	0	0	0	0	29
11.25 - 33.75	NNE	0	2	1	6	19	8	0	0	0	0	0	36
33.75 - 56.25	NE	0	0	2	4	13	4	0	0	0	0	0	23
56.25 - 78.75	ENE	0	1	3	2	4	0	0	0	0	0	0	10
78.75 - 101.25	E	0	1	3	0	0	0	0	0	0	0	0	4
101.25 - 123.75	ESE	0	0	1	1	4	0	0	0	0	0	0	6
123.75 - 146.25	SE	0	0	1	0	2	0	0	0	0	0	0	3
146.25 - 168.75	SSE	0	0	1	1	0	0	0	0	0	0	0	2
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	1	0	0	0	0	0	2
213.75 - 236.25	SW	0	0	1	2	2	2	0	0	0	0	0	7
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	1	2	0	0	0	0	0	0	3
281.25 - 303.75	WNW	0	0	0	6	2	0	0	0	0	0	0	8
303.75 - 326.25	NW	0	0	5	8	7	3	0	0	0	0	0	23
326.25 - 348.75	NNW	0	1	4	1	14	9	0	0	0	0	0	29

Total 186

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.046	0.000	0.000	0.594	0.685	0.000	0.000	0.000	0.000	0.000	1.32
11.25 - 33.75	NNE	0.000	0.091	0.046	0.274	0.868	0.365	0.000	0.000	0.000	0.000	0.000	1.64
33.75 - 56.25	NE	0.000	0.000	0.091	0.183	0.594	0.183	0.000	0.000	0.000	0.000	0.000	1.05
56.25 - 78.75	ENE	0.000	0.046	0.137	0.091	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.46
78.75 - 101.25	E	0.000	0.046	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.18
101.25 - 123.75	ESE	0.000	0.000	0.046	0.046	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.27
123.75 - 146.25	SE	0.000	0.000	0.046	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.14
146.25 - 168.75	SSE	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
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	0.046	0.000	0.000	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.000	0.046	0.091	0.091	0.091	0.000	0.000	0.000	0.000	0.000	0.32
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	0.046	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.000	0.274	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.37
303.75 - 326.25	NW	0.000	0.000	0.228	0.365	0.320	0.137	0.000	0.000	0.000	0.000	0.000	1.05
326.25 - 348.75	NNW	0.000	0.046	0.183	0.046	0.640	0.411	0.000	0.000	0.000	0.000	0.000	1.32

Total 8.50

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	2	0	2	0	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	3	0	3	0	0	0	0	0	0	3
33.75 - 56.25	NE	0	0	1	0	1	0	0	0	0	0	0	1
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	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	1	0	0	0	0	0	0	0	0	0	0	1

Total 7

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.091	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.137	0.000	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.14
33.75 - 56.25	NE	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
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	0.000	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	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05

Total 0.32

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	9	7	8	48	45	27	13	0	0	0	155
11.25 - 33.75	NNE	1	8	12	24	63	23	5	3	5	0	0	141
33.75 - 56.25	NE	0	1	13	9	54	55	24	4	0	0	0	159
56.25 - 78.75	ENE	0	9	9	10	31	19	15	6	0	0	0	99
78.75 - 101.25	E	0	3	14	10	17	2	0	0	0	0	0	46
101.25 - 123.75	ESE	0	2	3	4	22	7	2	1	0	0	0	41
123.75 - 146.25	SE	0	1	3	4	11	20	27	41	56	10	0	173
146.25 - 168.75	SSE	1	0	3	14	34	40	52	38	51	8	0	241
168.75 - 191.25	S	0	3	2	20	42	39	33	23	7	2	0	171
191.25 - 213.75	SSW	0	3	5	20	62	49	32	6	2	0	0	179
213.75 - 236.25	SW	0	1	5	17	53	57	19	3	0	0	0	155
236.25 - 258.75	WSW	0	2	2	14	47	31	14	4	0	0	0	114
258.75 - 281.25	W	0	3	8	15	22	15	15	10	0	1	0	89
281.25 - 303.75	WNW	0	4	15	26	30	18	14	11	1	0	0	119
303.75 - 326.25	NW	0	5	15	28	56	32	11	5	0	0	0	152
326.25 - 348.75	NNW	1	10	14	11	60	39	13	7	0	0	0	155

Total 2,189

MISSING HOURS: 19
 JOINT DATA RECOVERY: 99.1%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JULY - SEPTEMBER 2015 (Q3)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.411	0.320	0.365	2.193	2.056	1.233	0.594	0.000	0.000	0.000	7.08
11.25 - 33.75	NNE	0.046	0.365	0.548	1.096	2.878	1.051	0.228	0.137	0.228	0.000	0.000	6.44
33.75 - 56.25	NE	0.000	0.046	0.594	0.411	2.467	2.513	1.096	0.183	0.000	0.000	0.000	7.26
56.25 - 78.75	ENE	0.000	0.411	0.411	0.457	1.416	0.868	0.685	0.274	0.000	0.000	0.000	4.52
78.75 - 101.25	E	0.000	0.137	0.640	0.457	0.777	0.091	0.000	0.000	0.000	0.000	0.000	2.10
101.25 - 123.75	ESE	0.000	0.091	0.137	0.183	1.005	0.320	0.091	0.046	0.000	0.000	0.000	1.87
123.75 - 146.25	SE	0.000	0.046	0.137	0.183	0.503	0.914	1.233	1.873	2.558	0.457	0.000	7.90
146.25 - 168.75	SSE	0.046	0.000	0.137	0.640	1.553	1.827	2.376	1.736	2.330	0.365	0.000	11.01
168.75 - 191.25	S	0.000	0.137	0.091	0.914	1.919	1.782	1.508	1.051	0.320	0.091	0.000	7.81
191.25 - 213.75	SSW	0.000	0.137	0.228	0.914	2.832	2.238	1.462	0.274	0.091	0.000	0.000	8.18
213.75 - 236.25	SW	0.000	0.046	0.228	0.777	2.421	2.604	0.868	0.137	0.000	0.000	0.000	7.08
236.25 - 258.75	WSW	0.000	0.091	0.091	0.640	2.147	1.416	0.640	0.183	0.000	0.000	0.000	5.21
258.75 - 281.25	W	0.000	0.137	0.365	0.685	1.005	0.685	0.685	0.457	0.000	0.046	0.000	4.07
281.25 - 303.75	WNW	0.000	0.183	0.685	1.188	1.370	0.822	0.640	0.503	0.046	0.000	0.000	5.44
303.75 - 326.25	NW	0.000	0.228	0.685	1.279	2.558	1.462	0.503	0.228	0.000	0.000	0.000	6.94
326.25 - 348.75	NNW	0.046	0.457	0.640	0.503	2.741	1.782	0.594	0.320	0.000	0.000	0.000	7.08

Total 100.00

MISSING HOURS: 19
 JOINT DATA RECOVERY: 99.1%

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 2015

Page Intentionally Left Blank

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	2	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	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	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	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	2	0	0	0	0	2
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	1	0	0	0	0	1
303.75 - 326.25	NW	0	0	0	0	0	0	0	4	3	0	0	7
326.25 - 348.75	NNW	0	0	0	0	0	1	1	0	0	0	0	2

Total 15

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.091	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	0.000	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	0.045	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	0.000	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	0.091	0.000	0.000	0.000	0.000	0.09
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	0.045	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.181	0.136	0.000	0.000	0.32
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.045	0.045	0.000	0.000	0.000	0.000	0.09

Total 0.68

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	0	0	0	0	2	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	0	0	1	0	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	0	0	1	0	0	0	0	1
56.25 - 78.75	ENE	0	0	0	0	0	0	1	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	1	3	0	0	0	0	0	4
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	1	2	0	0	0	0	0	3
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	2	1	0	0	0	0	3
258.75 - 281.25	W	0	0	0	0	0	2	0	0	1	0	0	3
281.25 - 303.75	WNW	0	0	0	0	0	5	2	0	2	0	0	9
303.75 - 326.25	NW	0	0	0	0	0	1	2	9	2	2	0	16
326.25 - 348.75	NNW	0	0	0	0	0	5	1	0	1	0	0	7

Total 52

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.091	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	0.000	0.045	0.000	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.05
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.045	0.136	0.000	0.000	0.000	0.000	0.000	0.18
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	0.045	0.091	0.000	0.000	0.000	0.000	0.000	0.14
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.045	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	0.045	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	0.091	0.045	0.000	0.000	0.000	0.000	0.14
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.045	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.227	0.091	0.000	0.091	0.000	0.000	0.41
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.045	0.091	0.408	0.091	0.091	0.000	0.73
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.227	0.045	0.000	0.045	0.000	0.000	0.32

Total 2.36

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	0	0	2	2	1	0	0	0	0	5
11.25 - 33.75	NNE	0	0	0	0	0	3	2	0	0	0	0	5
33.75 - 56.25	NE	0	0	0	1	1	2	2	1	0	0	0	7
56.25 - 78.75	ENE	0	0	0	0	0	0	1	0	0	1	0	2
78.75 - 101.25	E	0	0	0	0	2	1	0	0	0	0	0	3
101.25 - 123.75	ESE	0	0	0	0	1	1	0	0	0	0	0	2
123.75 - 146.25	SE	0	0	0	0	1	0	0	0	0	0	0	1
146.25 - 168.75	SSE	0	0	0	0	2	1	1	0	0	0	0	4
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	4	3	0	0	0	0	0	7
236.25 - 258.75	WSW	0	0	0	2	1	5	1	0	0	0	0	9
258.75 - 281.25	W	0	0	0	0	2	1	1	0	1	0	0	5
281.25 - 303.75	WNW	0	0	0	1	1	1	2	0	5	0	0	10
303.75 - 326.25	NW	0	0	0	0	4	3	4	3	4	0	0	18
326.25 - 348.75	NNW	0	0	0	0	0	2	5	0	1	0	0	8

Total 86

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.091	0.091	0.045	0.000	0.000	0.000	0.000	0.23
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.136	0.091	0.000	0.000	0.000	0.000	0.23
33.75 - 56.25	NE	0.000	0.000	0.000	0.045	0.045	0.091	0.091	0.045	0.000	0.000	0.000	0.32
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.045	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.091	0.045	0.000	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.045	0.045	0.000	0.000	0.000	0.000	0.000	0.09
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.05
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.091	0.045	0.045	0.000	0.000	0.000	0.000	0.18
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	0.181	0.136	0.000	0.000	0.000	0.000	0.000	0.32
236.25 - 258.75	WSW	0.000	0.000	0.000	0.091	0.045	0.227	0.045	0.000	0.000	0.000	0.000	0.41
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.091	0.045	0.045	0.000	0.045	0.000	0.000	0.23
281.25 - 303.75	WNW	0.000	0.000	0.000	0.045	0.045	0.045	0.091	0.000	0.227	0.000	0.000	0.45
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.181	0.136	0.181	0.136	0.181	0.000	0.000	0.82
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.091	0.227	0.000	0.045	0.000	0.000	0.36

Total 3.90

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		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
348.75 - 11.25	N	0	0	2	5	9	2	2	0	1	0	0	21
11.25 - 33.75	NNE	0	2	1	6	14	9	13	15	17	2	0	79
33.75 - 56.25	NE	0	1	1	8	8	12	6	13	29	8	0	86
56.25 - 78.75	ENE	0	2	4	3	7	13	6	0	2	0	0	37
78.75 - 101.25	E	0	0	2	4	7	14	1	1	0	0	0	29
101.25 - 123.75	ESE	0	0	0	5	5	2	1	3	4	1	0	21
123.75 - 146.25	SE	0	1	0	0	6	3	7	11	0	0	0	28
146.25 - 168.75	SSE	0	0	0	2	8	2	9	5	4	0	0	30
168.75 - 191.25	S	0	1	3	3	5	9	12	15	10	1	0	59
191.25 - 213.75	SSW	0	0	2	3	3	2	5	6	1	0	0	22
213.75 - 236.25	SW	0	0	2	6	4	3	10	2	4	0	0	31
236.25 - 258.75	WSW	0	1	3	5	3	8	8	2	0	0	0	30
258.75 - 281.25	W	0	1	2	3	3	9	11	4	8	0	0	41
281.25 - 303.75	WNW	0	2	2	2	5	5	9	11	20	0	0	56
303.75 - 326.25	NW	0	1	3	4	3	7	28	12	9	0	0	67
326.25 - 348.75	NNW	0	1	2	6	7	10	13	11	3	0	0	53

Total 690

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		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
348.75 - 11.25	N	0.000	0.000	0.091	0.227	0.408	0.091	0.091	0.000	0.045	0.000	0.000	0.95
11.25 - 33.75	NNE	0.000	0.091	0.045	0.272	0.635	0.408	0.590	0.681	0.771	0.091	0.000	3.58
33.75 - 56.25	NE	0.000	0.045	0.045	0.363	0.363	0.544	0.272	0.590	1.316	0.363	0.000	3.90
56.25 - 78.75	ENE	0.000	0.091	0.181	0.136	0.318	0.590	0.272	0.000	0.091	0.000	0.000	1.68
78.75 - 101.25	E	0.000	0.000	0.091	0.181	0.318	0.635	0.045	0.045	0.000	0.000	0.000	1.32
101.25 - 123.75	ESE	0.000	0.000	0.000	0.227	0.227	0.091	0.045	0.136	0.181	0.045	0.000	0.95
123.75 - 146.25	SE	0.000	0.045	0.000	0.000	0.272	0.136	0.318	0.499	0.000	0.000	0.000	1.27
146.25 - 168.75	SSE	0.000	0.000	0.000	0.091	0.363	0.091	0.408	0.227	0.181	0.000	0.000	1.36
168.75 - 191.25	S	0.000	0.045	0.136	0.136	0.227	0.408	0.544	0.681	0.454	0.045	0.000	2.68
191.25 - 213.75	SSW	0.000	0.000	0.091	0.136	0.136	0.091	0.227	0.272	0.045	0.000	0.000	1.00
213.75 - 236.25	SW	0.000	0.000	0.091	0.272	0.181	0.136	0.454	0.091	0.181	0.000	0.000	1.41
236.25 - 258.75	WSW	0.000	0.045	0.136	0.227	0.136	0.363	0.363	0.091	0.000	0.000	0.000	1.36
258.75 - 281.25	W	0.000	0.045	0.091	0.136	0.136	0.408	0.499	0.181	0.363	0.000	0.000	1.86
281.25 - 303.75	WNW	0.000	0.091	0.091	0.091	0.227	0.227	0.408	0.499	0.907	0.000	0.000	2.54
303.75 - 326.25	NW	0.000	0.045	0.136	0.181	0.136	0.318	1.270	0.544	0.408	0.000	0.000	3.04
326.25 - 348.75	NNW	0.000	0.045	0.091	0.272	0.318	0.454	0.590	0.499	0.136	0.000	0.000	2.40

Total 31.31

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	2	0	2	3	5	8	7	6	0	0	0	33
11.25 - 33.75	NNE	1	3	1	3	16	8	12	4	0	0	0	48
33.75 - 56.25	NE	1	0	4	7	19	14	3	5	0	0	0	53
56.25 - 78.75	ENE	0	3	1	0	10	7	1	1	0	0	0	23
78.75 - 101.25	E	0	3	5	4	3	2	1	0	0	0	0	18
101.25 - 123.75	ESE	0	3	4	5	11	3	1	1	3	0	0	31
123.75 - 146.25	SE	0	5	4	7	15	8	5	13	16	1	0	74
146.25 - 168.75	SSE	0	2	5	7	9	4	5	4	2	0	0	38
168.75 - 191.25	S	0	3	5	5	10	9	8	2	1	1	0	44
191.25 - 213.75	SSW	0	1	5	1	19	13	10	6	8	1	0	64
213.75 - 236.25	SW	1	3	3	7	24	13	12	3	2	0	0	68
236.25 - 258.75	WSW	0	1	3	5	19	12	3	0	0	0	0	43
258.75 - 281.25	W	0	1	8	5	18	12	2	4	0	0	0	50
281.25 - 303.75	WNW	0	5	6	8	28	23	5	5	2	0	0	82
303.75 - 326.25	NW	0	1	5	2	33	46	19	5	1	0	0	112
326.25 - 348.75	NNW	0	3	5	5	17	32	12	9	1	0	0	84

Total 865

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.091	0.000	0.091	0.136	0.227	0.363	0.318	0.272	0.000	0.000	0.000	1.50
11.25 - 33.75	NNE	0.045	0.136	0.045	0.136	0.726	0.363	0.544	0.181	0.000	0.000	0.000	2.18
33.75 - 56.25	NE	0.045	0.000	0.181	0.318	0.862	0.635	0.136	0.227	0.000	0.000	0.000	2.40
56.25 - 78.75	ENE	0.000	0.136	0.045	0.000	0.454	0.318	0.045	0.045	0.000	0.000	0.000	1.04
78.75 - 101.25	E	0.000	0.136	0.227	0.181	0.136	0.091	0.045	0.000	0.000	0.000	0.000	0.82
101.25 - 123.75	ESE	0.000	0.136	0.181	0.227	0.499	0.136	0.045	0.045	0.136	0.000	0.000	1.41
123.75 - 146.25	SE	0.000	0.227	0.181	0.318	0.681	0.363	0.227	0.590	0.726	0.045	0.000	3.36
146.25 - 168.75	SSE	0.000	0.091	0.227	0.318	0.408	0.181	0.227	0.181	0.091	0.000	0.000	1.72
168.75 - 191.25	S	0.000	0.136	0.227	0.227	0.454	0.408	0.363	0.091	0.045	0.045	0.000	2.00
191.25 - 213.75	SSW	0.000	0.045	0.227	0.045	0.862	0.590	0.454	0.272	0.363	0.045	0.000	2.90
213.75 - 236.25	SW	0.045	0.136	0.136	0.318	1.089	0.590	0.544	0.136	0.091	0.000	0.000	3.09
236.25 - 258.75	WSW	0.000	0.045	0.136	0.227	0.862	0.544	0.136	0.000	0.000	0.000	0.000	1.95
258.75 - 281.25	W	0.000	0.045	0.363	0.227	0.817	0.544	0.091	0.181	0.000	0.000	0.000	2.27
281.25 - 303.75	WNW	0.000	0.227	0.272	0.363	1.270	1.044	0.227	0.227	0.091	0.000	0.000	3.72
303.75 - 326.25	NW	0.000	0.045	0.227	0.091	1.497	2.087	0.862	0.227	0.045	0.000	0.000	5.08
326.25 - 348.75	NNW	0.000	0.136	0.227	0.227	0.771	1.452	0.544	0.408	0.045	0.000	0.000	3.81

Total 39.25

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	4	5	1	9	8	0	0	0	0	0	27
11.25 - 33.75	NNE	0	6	2	9	20	6	0	0	0	0	0	43
33.75 - 56.25	NE	0	3	1	2	8	16	0	0	1	0	0	31
56.25 - 78.75	ENE	0	5	6	3	7	0	0	0	0	0	0	21
78.75 - 101.25	E	0	4	6	5	2	0	0	0	0	0	0	17
101.25 - 123.75	ESE	0	3	3	4	5	2	0	0	0	0	0	17
123.75 - 146.25	SE	0	2	0	8	22	9	3	1	8	3	0	56
146.25 - 168.75	SSE	0	3	6	10	8	4	1	2	0	0	0	34
168.75 - 191.25	S	0	5	6	3	0	0	0	1	0	1	0	16
191.25 - 213.75	SSW	0	0	5	4	2	2	2	6	4	0	0	25
213.75 - 236.25	SW	0	0	1	2	2	4	2	0	0	0	0	11
236.25 - 258.75	WSW	0	1	0	1	9	0	0	0	0	0	0	11
258.75 - 281.25	W	0	0	1	2	5	0	0	0	0	0	0	8
281.25 - 303.75	WNW	0	3	2	4	1	0	0	0	0	0	0	10
303.75 - 326.25	NW	0	4	3	1	5	0	0	0	0	0	0	13
326.25 - 348.75	NNW	0	2	4	3	11	4	0	0	0	0	0	24

Total 364

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.181	0.227	0.045	0.408	0.363	0.000	0.000	0.000	0.000	0.000	1.23
11.25 - 33.75	NNE	0.000	0.272	0.091	0.408	0.907	0.272	0.000	0.000	0.000	0.000	0.000	1.95
33.75 - 56.25	NE	0.000	0.136	0.045	0.091	0.363	0.726	0.000	0.000	0.045	0.000	0.000	1.41
56.25 - 78.75	ENE	0.000	0.227	0.272	0.136	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.95
78.75 - 101.25	E	0.000	0.181	0.272	0.227	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.77
101.25 - 123.75	ESE	0.000	0.136	0.136	0.181	0.227	0.091	0.000	0.000	0.000	0.000	0.000	0.77
123.75 - 146.25	SE	0.000	0.091	0.000	0.363	0.998	0.408	0.136	0.045	0.363	0.136	0.000	2.54
146.25 - 168.75	SSE	0.000	0.136	0.272	0.454	0.363	0.181	0.045	0.091	0.000	0.000	0.000	1.54
168.75 - 191.25	S	0.000	0.227	0.272	0.136	0.000	0.000	0.000	0.045	0.000	0.045	0.000	0.73
191.25 - 213.75	SSW	0.000	0.000	0.227	0.181	0.091	0.091	0.091	0.272	0.181	0.000	0.000	1.13
213.75 - 236.25	SW	0.000	0.000	0.045	0.091	0.091	0.181	0.091	0.000	0.000	0.000	0.000	0.50
236.25 - 258.75	WSW	0.000	0.045	0.000	0.045	0.408	0.000	0.000	0.000	0.000	0.000	0.000	0.50
258.75 - 281.25	W	0.000	0.000	0.045	0.091	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.36
281.25 - 303.75	WNW	0.000	0.136	0.091	0.181	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.45
303.75 - 326.25	NW	0.000	0.181	0.136	0.045	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.59
326.25 - 348.75	NNW	0.000	0.091	0.181	0.136	0.499	0.181	0.000	0.000	0.000	0.000	0.000	1.09

Total 16.52

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	2	1	2	0	0	0	0	0	0	5
11.25 - 33.75	NNE	0	1	0	5	8	3	0	0	0	0	0	17
33.75 - 56.25	NE	1	1	1	4	6	0	0	0	0	0	0	13
56.25 - 78.75	ENE	0	0	3	4	2	0	0	0	0	0	0	9
78.75 - 101.25	E	0	1	1	1	0	0	0	0	0	0	0	3
101.25 - 123.75	ESE	0	0	3	1	3	0	0	0	0	0	0	7
123.75 - 146.25	SE	0	0	3	5	16	0	1	6	4	0	0	35
146.25 - 168.75	SSE	0	2	2	6	12	1	0	0	0	0	0	23
168.75 - 191.25	S	0	1	2	2	1	0	0	0	0	0	0	6
191.25 - 213.75	SSW	0	2	0	0	0	0	0	0	0	0	0	2
213.75 - 236.25	SW	0	1	2	0	0	0	0	0	0	0	0	3
236.25 - 258.75	WSW	0	0	1	0	0	0	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	1	0	0	0	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	1	0	0	0	0	0	0	0	0	0	1
326.25 - 348.75	NNW	0	1	4	0	1	0	0	0	0	0	0	6

Total 132

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.091	0.045	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.23
11.25 - 33.75	NNE	0.000	0.045	0.000	0.227	0.363	0.136	0.000	0.000	0.000	0.000	0.000	0.77
33.75 - 56.25	NE	0.045	0.045	0.045	0.181	0.272	0.000	0.000	0.000	0.000	0.000	0.000	0.59
56.25 - 78.75	ENE	0.000	0.000	0.136	0.181	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.41
78.75 - 101.25	E	0.000	0.045	0.045	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.136	0.045	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.32
123.75 - 146.25	SE	0.000	0.000	0.136	0.227	0.726	0.000	0.045	0.272	0.181	0.000	0.000	1.59
146.25 - 168.75	SSE	0.000	0.091	0.091	0.272	0.544	0.045	0.000	0.000	0.000	0.000	0.000	1.04
168.75 - 191.25	S	0.000	0.045	0.091	0.091	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.27
191.25 - 213.75	SSW	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
213.75 - 236.25	SW	0.000	0.045	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.045	0.000	0.000	0.000	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	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
326.25 - 348.75	NNW	0.000	0.045	0.181	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.27

Total 5.99

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		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
348.75 - 11.25	N	2	4	11	10	27	20	14	6	1	0	0	95
11.25 - 33.75	NNE	1	12	4	23	58	29	28	19	17	2	0	193
33.75 - 56.25	NE	2	5	7	22	42	44	12	19	30	8	0	191
56.25 - 78.75	ENE	0	10	14	10	26	20	9	1	2	1	0	93
78.75 - 101.25	E	0	8	14	14	15	20	2	1	0	0	0	74
101.25 - 123.75	ESE	0	6	10	15	25	8	2	4	7	1	0	78
123.75 - 146.25	SE	0	8	7	20	60	20	16	31	28	4	0	194
146.25 - 168.75	SSE	0	7	13	25	40	15	16	11	6	0	0	133
168.75 - 191.25	S	0	10	16	13	16	18	21	18	11	3	0	126
191.25 - 213.75	SSW	0	3	12	8	24	17	17	18	13	1	0	113
213.75 - 236.25	SW	1	4	8	15	35	23	24	5	6	0	0	121
236.25 - 258.75	WSW	0	3	7	13	32	27	15	2	0	0	0	99
258.75 - 281.25	W	0	2	11	10	28	24	14	8	10	0	0	107
281.25 - 303.75	WNW	0	11	10	15	35	34	19	16	29	0	0	169
303.75 - 326.25	NW	0	7	11	7	45	57	53	33	19	2	0	234
326.25 - 348.75	NNW	0	7	15	14	36	54	32	20	6	0	0	184

Total 2,204

MISSING HOURS: 4
 JOINT DATA RECOVERY: 99.8%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 OCTOBER - DECEMBER 2015 (Q4)
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		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
348.75 - 11.25	N	0.091	0.181	0.499	0.454	1.225	0.907	0.635	0.272	0.045	0.000	0.000	4.31
11.25 - 33.75	NNE	0.045	0.544	0.181	1.044	2.632	1.316	1.270	0.862	0.771	0.091	0.000	8.76
33.75 - 56.25	NE	0.091	0.227	0.318	0.998	1.906	1.996	0.544	0.862	1.361	0.363	0.000	8.67
56.25 - 78.75	ENE	0.000	0.454	0.635	0.454	1.180	0.907	0.408	0.045	0.091	0.045	0.000	4.22
78.75 - 101.25	E	0.000	0.363	0.635	0.635	0.681	0.907	0.091	0.045	0.000	0.000	0.000	3.36
101.25 - 123.75	ESE	0.000	0.272	0.454	0.681	1.134	0.363	0.091	0.181	0.318	0.045	0.000	3.54
123.75 - 146.25	SE	0.000	0.363	0.318	0.907	2.722	0.907	0.726	1.407	1.270	0.181	0.000	8.80
146.25 - 168.75	SSE	0.000	0.318	0.590	1.134	1.815	0.681	0.726	0.499	0.272	0.000	0.000	6.03
168.75 - 191.25	S	0.000	0.454	0.726	0.590	0.726	0.817	0.953	0.817	0.499	0.136	0.000	5.72
191.25 - 213.75	SSW	0.000	0.136	0.544	0.363	1.089	0.771	0.771	0.817	0.590	0.045	0.000	5.13
213.75 - 236.25	SW	0.045	0.181	0.363	0.681	1.588	1.044	1.089	0.227	0.272	0.000	0.000	5.49
236.25 - 258.75	WSW	0.000	0.136	0.318	0.590	1.452	1.225	0.681	0.091	0.000	0.000	0.000	4.49
258.75 - 281.25	W	0.000	0.091	0.499	0.454	1.270	1.089	0.635	0.363	0.454	0.000	0.000	4.85
281.25 - 303.75	WNW	0.000	0.499	0.454	0.681	1.588	1.543	0.862	0.726	1.316	0.000	0.000	7.67
303.75 - 326.25	NW	0.000	0.318	0.499	0.318	2.042	2.586	2.405	1.497	0.862	0.091	0.000	10.62
326.25 - 348.75	NNW	0.000	0.318	0.681	0.635	1.633	2.450	1.452	0.907	0.272	0.000	0.000	8.35

Total 100.00

MISSING HOURS: 4
 JOINT DATA RECOVERY: 99.8%

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
January – December 2015

Page Intentionally Left Blank

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	0	0	0	0	2	4	1	0	0	0	7
11.25 - 33.75	NNE	0	0	0	0	0	0	1	0	3	0	0	4
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	3	0	0	0	0	0	3
78.75 - 101.25	E	0	0	0	0	1	0	1	0	0	0	0	2
101.25 - 123.75	ESE	0	0	0	0	0	0	3	0	0	0	0	3
123.75 - 146.25	SE	0	0	0	0	0	1	4	3	4	3	0	15
146.25 - 168.75	SSE	0	0	0	0	0	1	0	1	5	0	0	7
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	1	0	0	0	2
213.75 - 236.25	SW	0	0	0	0	0	0	1	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	3	5	3	1	0	0	12
258.75 - 281.25	W	0	0	0	0	0	1	1	5	4	0	0	11
281.25 - 303.75	WNW	0	0	0	0	0	2	1	2	2	0	0	7
303.75 - 326.25	NW	0	0	0	0	0	0	5	18	33	5	0	61
326.25 - 348.75	NNW	0	0	0	0	0	3	2	9	4	2	0	20

Total 156

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.023	0.046	0.012	0.000	0.000	0.000	0.08
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.035	0.000	0.000	0.05
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	0.035	0.000	0.000	0.000	0.000	0.000	0.03
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.012	0.000	0.012	0.000	0.000	0.000	0.000	0.02
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.03
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.012	0.046	0.035	0.046	0.035	0.000	0.17
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.012	0.058	0.000	0.000	0.08
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.01
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.012	0.000	0.000	0.000	0.02
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.012	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	0.035	0.058	0.035	0.012	0.000	0.000	0.14
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.012	0.012	0.058	0.046	0.000	0.000	0.13
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.023	0.012	0.023	0.023	0.000	0.000	0.08
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.058	0.207	0.380	0.058	0.000	0.70
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.035	0.023	0.104	0.046	0.023	0.000	0.23

Total 1.80

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
	Sect.												
348.75 - 11.25	N	0	0	0	0	1	4	3	1	1	0	0	10
11.25 - 33.75	NNE	0	0	0	0	1	5	2	1	3	0	0	12
33.75 - 56.25	NE	0	0	0	0	1	5	4	0	0	0	0	10
56.25 - 78.75	ENE	0	0	0	0	0	3	3	1	0	0	0	7
78.75 - 101.25	E	0	0	0	0	1	4	1	0	0	0	0	6
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	4	6	3	1	0	15
146.25 - 168.75	SSE	0	0	0	0	2	4	1	1	2	0	0	10
168.75 - 191.25	S	0	0	0	0	3	0	2	0	0	0	0	5
191.25 - 213.75	SSW	0	0	0	0	4	3	0	0	0	0	0	7
213.75 - 236.25	SW	0	0	0	0	3	1	3	1	0	0	0	8
236.25 - 258.75	WSW	0	0	0	0	3	3	3	6	0	0	0	15
258.75 - 281.25	W	0	0	0	0	0	8	7	7	5	0	0	27
281.25 - 303.75	WNW	0	0	0	0	3	6	7	1	5	0	0	22
303.75 - 326.25	NW	0	0	0	0	1	4	7	18	18	4	0	52
326.25 - 348.75	NNW	0	0	0	0	1	8	5	2	7	1	0	24

Total 230

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
 FREQUENCY (%)

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.012	0.046	0.035	0.012	0.012	0.000	0.000	0.12
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.012	0.058	0.023	0.012	0.035	0.000	0.000	0.14
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.012	0.058	0.046	0.000	0.000	0.000	0.000	0.12
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.012	0.000	0.000	0.000	0.08
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.012	0.046	0.012	0.000	0.000	0.000	0.000	0.07
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	0.012	0.046	0.069	0.035	0.012	0.000	0.17
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.023	0.046	0.012	0.012	0.023	0.000	0.000	0.12
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.035	0.000	0.023	0.000	0.000	0.000	0.000	0.06
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.035	0.000	0.000	0.000	0.000	0.000	0.08
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.035	0.012	0.035	0.012	0.000	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.069	0.000	0.000	0.000	0.17
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.092	0.081	0.081	0.058	0.000	0.000	0.31
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.035	0.069	0.081	0.012	0.058	0.000	0.000	0.25
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.012	0.046	0.081	0.207	0.207	0.046	0.000	0.60
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.012	0.092	0.058	0.023	0.081	0.012	0.000	0.28

Total 2.65

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
Sect.													
348.75 - 11.25	N	0	0	0	0	6	11	3	0	1	0	0	21
11.25 - 33.75	NNE	0	0	0	2	3	8	7	4	1	0	0	25
33.75 - 56.25	NE	0	0	0	1	4	8	7	2	0	0	0	22
56.25 - 78.75	ENE	0	0	0	1	3	6	3	1	0	1	0	15
78.75 - 101.25	E	0	0	0	0	2	2	0	0	0	0	0	4
101.25 - 123.75	ESE	0	0	0	0	2	1	0	0	0	0	0	3
123.75 - 146.25	SE	0	0	0	0	1	6	8	4	9	2	3	33
146.25 - 168.75	SSE	0	0	1	0	9	12	6	1	1	0	0	30
168.75 - 191.25	S	0	0	0	1	8	3	0	1	0	0	0	13
191.25 - 213.75	SSW	0	0	0	2	9	6	2	4	0	0	0	23
213.75 - 236.25	SW	0	0	0	4	11	8	3	2	1	0	0	29
236.25 - 258.75	WSW	0	0	0	3	7	9	7	5	2	0	0	33
258.75 - 281.25	W	0	0	1	2	3	14	14	12	5	0	0	51
281.25 - 303.75	WNW	0	0	0	3	9	6	5	4	10	1	0	38
303.75 - 326.25	NW	0	0	0	1	8	11	15	14	18	6	0	73
326.25 - 348.75	NNW	0	0	0	3	8	15	14	6	6	2	0	54

Total 467

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.069	0.127	0.035	0.000	0.012	0.000	0.000	0.24
11.25 - 33.75	NNE	0.000	0.000	0.000	0.023	0.035	0.092	0.081	0.046	0.012	0.000	0.000	0.29
33.75 - 56.25	NE	0.000	0.000	0.000	0.012	0.046	0.092	0.081	0.023	0.000	0.000	0.000	0.25
56.25 - 78.75	ENE	0.000	0.000	0.000	0.012	0.035	0.069	0.035	0.012	0.000	0.012	0.000	0.17
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.023	0.023	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	0.023	0.012	0.000	0.000	0.000	0.000	0.000	0.03
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.012	0.069	0.092	0.046	0.104	0.023	0.035	0.38
146.25 - 168.75	SSE	0.000	0.000	0.012	0.000	0.104	0.138	0.069	0.012	0.012	0.000	0.000	0.35
168.75 - 191.25	S	0.000	0.000	0.000	0.012	0.092	0.035	0.000	0.012	0.000	0.000	0.000	0.15
191.25 - 213.75	SSW	0.000	0.000	0.000	0.023	0.104	0.069	0.023	0.046	0.000	0.000	0.000	0.26
213.75 - 236.25	SW	0.000	0.000	0.000	0.046	0.127	0.092	0.035	0.023	0.012	0.000	0.000	0.33
236.25 - 258.75	WSW	0.000	0.000	0.000	0.035	0.081	0.104	0.081	0.058	0.023	0.000	0.000	0.38
258.75 - 281.25	W	0.000	0.000	0.012	0.023	0.035	0.161	0.161	0.138	0.058	0.000	0.000	0.59
281.25 - 303.75	WNW	0.000	0.000	0.000	0.035	0.104	0.069	0.058	0.046	0.115	0.012	0.000	0.44
303.75 - 326.25	NW	0.000	0.000	0.000	0.012	0.092	0.127	0.173	0.161	0.207	0.069	0.000	0.84
326.25 - 348.75	NNW	0.000	0.000	0.000	0.035	0.092	0.173	0.161	0.069	0.069	0.023	0.000	0.62

Total 5.38

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 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 DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	5	7	14	46	33	28	20	12	0	0	165
11.25 - 33.75	NNE	0	2	7	19	47	34	66	36	32	2	0	245
33.75 - 56.25	NE	0	4	7	20	59	75	56	26	32	8	0	287
56.25 - 78.75	ENE	0	5	8	13	47	50	32	10	5	0	0	170
78.75 - 101.25	E	0	3	9	10	38	24	6	7	0	0	0	97
101.25 - 123.75	ESE	0	3	3	9	16	10	9	9	6	1	0	66
123.75 - 146.25	SE	0	2	1	3	31	33	47	52	80	13	4	266
146.25 - 168.75	SSE	0	1	4	18	57	50	75	66	79	15	1	366
168.75 - 191.25	S	0	4	9	28	62	77	65	56	47	10	0	358
191.25 - 213.75	SSW	0	3	11	25	67	40	41	20	12	3	0	222
213.75 - 236.25	SW	0	0	7	20	45	54	41	9	9	0	0	185
236.25 - 258.75	WSW	0	2	11	20	45	48	25	10	6	0	0	167
258.75 - 281.25	W	0	2	7	11	19	37	38	22	23	0	0	159
281.25 - 303.75	WNW	0	3	9	10	28	42	45	33	56	4	0	230
303.75 - 326.25	NW	0	3	7	12	38	54	74	63	77	37	2	367
326.25 - 348.75	NNW	0	2	11	22	45	44	41	36	27	1	0	229

Total 3,579

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
 FREQUENCY (%)

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.058	0.081	0.161	0.530	0.380	0.323	0.230	0.138	0.000	0.000	1.90
11.25 - 33.75	NNE	0.000	0.023	0.081	0.219	0.541	0.392	0.760	0.415	0.369	0.023	0.000	2.82
33.75 - 56.25	NE	0.000	0.046	0.081	0.230	0.680	0.864	0.645	0.300	0.369	0.092	0.000	3.31
56.25 - 78.75	ENE	0.000	0.058	0.092	0.150	0.541	0.576	0.369	0.115	0.058	0.000	0.000	1.96
78.75 - 101.25	E	0.000	0.035	0.104	0.115	0.438	0.276	0.069	0.081	0.000	0.000	0.000	1.12
101.25 - 123.75	ESE	0.000	0.035	0.035	0.104	0.184	0.115	0.104	0.104	0.069	0.012	0.000	0.76
123.75 - 146.25	SE	0.000	0.023	0.012	0.035	0.357	0.380	0.541	0.599	0.922	0.150	0.046	3.06
146.25 - 168.75	SSE	0.000	0.012	0.046	0.207	0.657	0.576	0.864	0.760	0.910	0.173	0.012	4.22
168.75 - 191.25	S	0.000	0.046	0.104	0.323	0.714	0.887	0.749	0.645	0.541	0.115	0.000	4.12
191.25 - 213.75	SSW	0.000	0.035	0.127	0.288	0.772	0.461	0.472	0.230	0.138	0.035	0.000	2.56
213.75 - 236.25	SW	0.000	0.000	0.081	0.230	0.518	0.622	0.472	0.104	0.104	0.000	0.000	2.13
236.25 - 258.75	WSW	0.000	0.023	0.127	0.230	0.518	0.553	0.288	0.115	0.069	0.000	0.000	1.92
258.75 - 281.25	W	0.000	0.023	0.081	0.127	0.219	0.426	0.438	0.253	0.265	0.000	0.000	1.83
281.25 - 303.75	WNW	0.000	0.035	0.104	0.115	0.323	0.484	0.518	0.380	0.645	0.046	0.000	2.65
303.75 - 326.25	NW	0.000	0.035	0.081	0.138	0.438	0.622	0.853	0.726	0.887	0.426	0.023	4.23
326.25 - 348.75	NNW	0.000	0.023	0.127	0.253	0.518	0.507	0.472	0.415	0.311	0.012	0.000	2.64

Total 41.23

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	2	6	6	15	35	23	44	14	0	0	0	145
11.25 - 33.75	NNE	2	10	10	31	72	39	17	5	1	0	0	187
33.75 - 56.25	NE	1	2	25	27	79	47	10	7	0	0	0	198
56.25 - 78.75	ENE	0	13	15	16	32	11	2	1	0	0	0	90
78.75 - 101.25	E	0	10	24	17	19	3	2	2	1	0	0	78
101.25 - 123.75	ESE	0	9	9	12	42	16	6	7	3	1	1	106
123.75 - 146.25	SE	0	8	9	25	28	42	42	44	32	5	0	235
146.25 - 168.75	SSE	1	3	10	14	38	39	31	14	12	0	0	162
168.75 - 191.25	S	0	5	12	14	25	31	25	17	5	2	0	136
191.25 - 213.75	SSW	0	4	8	15	60	53	42	22	21	2	0	227
213.75 - 236.25	SW	1	8	13	26	95	67	27	10	4	1	0	252
236.25 - 258.75	WSW	0	6	10	20	84	48	11	2	0	0	0	181
258.75 - 281.25	W	0	7	24	24	54	47	12	8	1	1	0	178
281.25 - 303.75	WNW	0	10	25	34	83	53	15	17	6	2	0	245
303.75 - 326.25	NW	0	6	22	28	116	93	56	21	7	2	0	351
326.25 - 348.75	NNW	0	13	15	16	69	72	38	22	5	0	0	250

Total 3,021

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.023	0.069	0.069	0.173	0.403	0.265	0.507	0.161	0.000	0.000	0.000	1.67
11.25 - 33.75	NNE	0.023	0.115	0.115	0.357	0.829	0.449	0.196	0.058	0.012	0.000	0.000	2.15
33.75 - 56.25	NE	0.012	0.023	0.288	0.311	0.910	0.541	0.115	0.081	0.000	0.000	0.000	2.28
56.25 - 78.75	ENE	0.000	0.150	0.173	0.184	0.369	0.127	0.023	0.012	0.000	0.000	0.000	1.04
78.75 - 101.25	E	0.000	0.115	0.276	0.196	0.219	0.035	0.023	0.023	0.012	0.000	0.000	0.90
101.25 - 123.75	ESE	0.000	0.104	0.104	0.138	0.484	0.184	0.069	0.081	0.035	0.012	0.012	1.22
123.75 - 146.25	SE	0.000	0.092	0.104	0.288	0.323	0.484	0.484	0.507	0.369	0.058	0.000	2.71
146.25 - 168.75	SSE	0.012	0.035	0.115	0.161	0.438	0.449	0.357	0.161	0.138	0.000	0.000	1.87
168.75 - 191.25	S	0.000	0.058	0.138	0.161	0.288	0.357	0.288	0.196	0.058	0.023	0.000	1.57
191.25 - 213.75	SSW	0.000	0.046	0.092	0.173	0.691	0.611	0.484	0.253	0.242	0.023	0.000	2.62
213.75 - 236.25	SW	0.012	0.092	0.150	0.300	1.094	0.772	0.311	0.115	0.046	0.012	0.000	2.90
236.25 - 258.75	WSW	0.000	0.069	0.115	0.230	0.968	0.553	0.127	0.023	0.000	0.000	0.000	2.09
258.75 - 281.25	W	0.000	0.081	0.276	0.276	0.622	0.541	0.138	0.092	0.012	0.012	0.000	2.05
281.25 - 303.75	WNW	0.000	0.115	0.288	0.392	0.956	0.611	0.173	0.196	0.069	0.023	0.000	2.82
303.75 - 326.25	NW	0.000	0.069	0.253	0.323	1.336	1.071	0.645	0.242	0.081	0.023	0.000	4.04
326.25 - 348.75	NNW	0.000	0.150	0.173	0.184	0.795	0.829	0.438	0.253	0.058	0.000	0.000	2.88

Total 34.80

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 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 DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0	6	8	4	31	30	0	0	0	0	0	79
11.25 - 33.75	NNE	0	9	3	21	41	20	0	0	0	0	0	94
33.75 - 56.25	NE	0	5	5	11	30	23	0	0	1	0	0	75
56.25 - 78.75	ENE	0	9	10	7	13	0	0	0	0	0	0	39
78.75 - 101.25	E	0	9	15	9	3	0	0	0	0	0	0	36
101.25 - 123.75	ESE	0	5	12	9	11	2	0	0	0	0	0	39
123.75 - 146.25	SE	0	4	5	15	37	23	14	11	15	3	0	127
146.25 - 168.75	SSE	0	5	12	16	16	12	11	4	2	0	0	78
168.75 - 191.25	S	0	6	11	9	8	8	4	6	4	3	0	59
191.25 - 213.75	SSW	0	1	6	9	12	6	6	8	7	0	0	55
213.75 - 236.25	SW	0	0	3	7	13	10	4	0	1	0	0	38
236.25 - 258.75	WSW	0	1	4	5	19	5	0	1	2	0	0	37
258.75 - 281.25	W	0	1	3	5	9	1	0	0	0	0	0	19
281.25 - 303.75	WNW	0	8	5	11	12	0	0	0	0	0	0	36
303.75 - 326.25	NW	0	4	11	14	31	8	1	0	0	0	0	69
326.25 - 348.75	NNW	0	5	9	6	33	18	1	0	0	0	0	72

Total 952

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.000	0.069	0.092	0.046	0.357	0.346	0.000	0.000	0.000	0.000	0.000	0.91
11.25 - 33.75	NNE	0.000	0.104	0.035	0.242	0.472	0.230	0.000	0.000	0.000	0.000	0.000	1.08
33.75 - 56.25	NE	0.000	0.058	0.058	0.127	0.346	0.265	0.000	0.000	0.012	0.000	0.000	0.86
56.25 - 78.75	ENE	0.000	0.104	0.115	0.081	0.150	0.000	0.000	0.000	0.000	0.000	0.000	0.45
78.75 - 101.25	E	0.000	0.104	0.173	0.104	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.41
101.25 - 123.75	ESE	0.000	0.058	0.138	0.104	0.127	0.023	0.000	0.000	0.000	0.000	0.000	0.45
123.75 - 146.25	SE	0.000	0.046	0.058	0.173	0.426	0.265	0.161	0.127	0.173	0.035	0.000	1.46
146.25 - 168.75	SSE	0.000	0.058	0.138	0.184	0.184	0.138	0.127	0.046	0.023	0.000	0.000	0.90
168.75 - 191.25	S	0.000	0.069	0.127	0.104	0.092	0.092	0.046	0.069	0.046	0.035	0.000	0.68
191.25 - 213.75	SSW	0.000	0.012	0.069	0.104	0.138	0.069	0.069	0.092	0.081	0.000	0.000	0.63
213.75 - 236.25	SW	0.000	0.000	0.035	0.081	0.150	0.115	0.046	0.000	0.012	0.000	0.000	0.44
236.25 - 258.75	WSW	0.000	0.012	0.046	0.058	0.219	0.058	0.000	0.012	0.023	0.000	0.000	0.43
258.75 - 281.25	W	0.000	0.012	0.035	0.058	0.104	0.012	0.000	0.000	0.000	0.000	0.000	0.22
281.25 - 303.75	WNW	0.000	0.092	0.058	0.127	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.41
303.75 - 326.25	NW	0.000	0.046	0.127	0.161	0.357	0.092	0.012	0.000	0.000	0.000	0.000	0.79
326.25 - 348.75	NNW	0.000	0.058	0.104	0.069	0.380	0.207	0.012	0.000	0.000	0.000	0.000	0.83

Total 10.97

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 TOTAL HOURS

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0	0	4	2	4	0	0	0	0	0	0	10
11.25 - 33.75	NNE	0	1	3	9	12	3	0	0	0	0	0	28
33.75 - 56.25	NE	1	2	1	4	9	0	0	0	0	0	0	17
56.25 - 78.75	ENE	0	0	3	4	2	0	0	0	0	0	0	9
78.75 - 101.25	E	0	1	4	2	0	0	0	0	0	0	0	7
101.25 - 123.75	ESE	0	0	4	5	3	1	0	0	0	0	0	13
123.75 - 146.25	SE	0	1	7	16	36	10	9	14	12	0	0	105
146.25 - 168.75	SSE	0	2	4	11	20	4	0	3	0	0	0	44
168.75 - 191.25	S	0	2	5	6	4	2	0	0	0	1	0	20
191.25 - 213.75	SSW	0	2	1	0	0	1	1	0	0	0	0	5
213.75 - 236.25	SW	0	1	2	0	1	0	0	0	0	0	0	4
236.25 - 258.75	WSW	0	0	1	0	0	0	0	0	0	0	0	1
258.75 - 281.25	W	0	0	0	1	0	0	0	0	0	0	0	1
281.25 - 303.75	WNW	0	1	0	0	0	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	2	0	0	0	0	0	0	0	0	0	2
326.25 - 348.75	NNW	0	1	5	0	2	0	0	0	0	0	0	8

Total 275

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
 FREQUENCY (%)

WIND DIRECTION (Degrees)		WIND SPEED GROUPS (m/sec)											Total
		< 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	
348.75 - 11.25	N	0.000	0.000	0.046	0.023	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.12
11.25 - 33.75	NNE	0.000	0.012	0.035	0.104	0.138	0.035	0.000	0.000	0.000	0.000	0.000	0.32
33.75 - 56.25	NE	0.012	0.023	0.012	0.046	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.20
56.25 - 78.75	ENE	0.000	0.000	0.035	0.046	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.10
78.75 - 101.25	E	0.000	0.012	0.046	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.08
101.25 - 123.75	ESE	0.000	0.000	0.046	0.058	0.035	0.012	0.000	0.000	0.000	0.000	0.000	0.15
123.75 - 146.25	SE	0.000	0.012	0.081	0.184	0.415	0.115	0.104	0.161	0.138	0.000	0.000	1.21
146.25 - 168.75	SSE	0.000	0.023	0.046	0.127	0.230	0.046	0.000	0.035	0.000	0.000	0.000	0.51
168.75 - 191.25	S	0.000	0.023	0.058	0.069	0.046	0.023	0.000	0.000	0.000	0.012	0.000	0.23
191.25 - 213.75	SSW	0.000	0.023	0.012	0.000	0.000	0.012	0.012	0.000	0.000	0.000	0.000	0.06
213.75 - 236.25	SW	0.000	0.012	0.023	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.05
236.25 - 258.75	WSW	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
258.75 - 281.25	W	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
281.25 - 303.75	WNW	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
303.75 - 326.25	NW	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.02
326.25 - 348.75	NNW	0.000	0.012	0.058	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.09

Total 3.17

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	2	17	25	35	123	103	82	36	14	0	0	437
11.25 - 33.75	NNE	2	22	23	82	176	109	93	46	40	2	0	595
33.75 - 56.25	NE	2	13	38	63	182	158	77	35	33	8	0	609
56.25 - 78.75	ENE	0	27	36	41	97	73	40	13	5	1	0	333
78.75 - 101.25	E	0	23	52	38	64	33	10	9	1	0	0	230
101.25 - 123.75	ESE	0	17	28	35	74	30	18	16	9	2	1	230
123.75 - 146.25	SE	0	15	22	59	133	116	128	134	155	27	7	796
146.25 - 168.75	SSE	1	11	31	59	142	122	124	90	101	15	1	697
168.75 - 191.25	S	0	17	37	58	110	121	97	80	56	16	0	592
191.25 - 213.75	SSW	0	10	26	51	152	110	92	55	40	5	0	541
213.75 - 236.25	SW	1	9	25	57	168	140	79	22	15	1	0	517
236.25 - 258.75	WSW	0	9	26	48	158	116	51	27	11	0	0	446
258.75 - 281.25	W	0	10	35	43	85	108	72	54	38	1	0	446
281.25 - 303.75	WNW	0	22	39	58	135	109	73	57	79	7	0	579
303.75 - 326.25	NW	0	15	40	55	194	170	158	134	153	54	2	975
326.25 - 348.75	NNW	0	21	40	47	158	160	101	75	49	6	0	657

Total 8,680

MISSING HOURS: 80
 JOINT DATA RECOVERY: 99.1%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
 JANUARY - DECEMBER 2015
 WIND LEVEL: 33 FT
 DELTA T: (300-33 FT)
 ALL STABILITY CLASSES
 FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											Total
		< 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	
(Degrees)	Sect.												
348.75 - 11.25	N	0.023	0.196	0.288	0.403	1.417	1.187	0.945	0.415	0.161	0.000	0.000	5.03
11.25 - 33.75	NNE	0.023	0.253	0.265	0.945	2.028	1.256	1.071	0.530	0.461	0.023	0.000	6.85
33.75 - 56.25	NE	0.023	0.150	0.438	0.726	2.097	1.820	0.887	0.403	0.380	0.092	0.000	7.02
56.25 - 78.75	ENE	0.000	0.311	0.415	0.472	1.118	0.841	0.461	0.150	0.058	0.012	0.000	3.84
78.75 - 101.25	E	0.000	0.265	0.599	0.438	0.737	0.380	0.115	0.104	0.012	0.000	0.000	2.65
101.25 - 123.75	ESE	0.000	0.196	0.323	0.403	0.853	0.346	0.207	0.184	0.104	0.023	0.012	2.65
123.75 - 146.25	SE	0.000	0.173	0.253	0.680	1.532	1.336	1.475	1.544	1.786	0.311	0.081	9.17
146.25 - 168.75	SSE	0.012	0.127	0.357	0.680	1.636	1.406	1.429	1.037	1.164	0.173	0.012	8.03
168.75 - 191.25	S	0.000	0.196	0.426	0.668	1.267	1.394	1.118	0.922	0.645	0.184	0.000	6.82
191.25 - 213.75	SSW	0.000	0.115	0.300	0.588	1.751	1.267	1.060	0.634	0.461	0.058	0.000	6.23
213.75 - 236.25	SW	0.012	0.104	0.288	0.657	1.935	1.613	0.910	0.253	0.173	0.012	0.000	5.96
236.25 - 258.75	WSW	0.000	0.104	0.300	0.553	1.820	1.336	0.588	0.311	0.127	0.000	0.000	5.14
258.75 - 281.25	W	0.000	0.115	0.403	0.495	0.979	1.244	0.829	0.622	0.438	0.012	0.000	5.14
281.25 - 303.75	WNW	0.000	0.253	0.449	0.668	1.555	1.256	0.841	0.657	0.910	0.081	0.000	6.67
303.75 - 326.25	NW	0.000	0.173	0.461	0.634	2.235	1.959	1.820	1.544	1.763	0.622	0.023	11.23
326.25 - 348.75	NNW	0.000	0.242	0.461	0.541	1.820	1.843	1.164	0.864	0.565	0.069	0.000	7.57

Total 100.00

MISSING HOURS: 80
 JOINT DATA RECOVERY: 99.1%

APPENDIX C

Maximum Permissible Concentration (MPC) Data

Page Intentionally Left Blank

2015 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
Antimony (51)	Am-244	5E-3	5E-3
	Sb-122	3E-5	3E-5
	Sb-124	2E-5	2E-5
	Sb-125	1E-4	1E-4
Arsenic (33)	Sb-126	3E-6	3E-6
	As-73	5E-4	5E-4
	As-74	5E-5	5E-5
	As-76	2E-5	2E-5
Astatine (85)	As-77	8E-5	8E-5
	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
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

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
	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
	I-135	4E-6	7E-5
Iridium (77)	Ir-190	2E-4	2E-4
	Ir-192	4E-5	4E-5
	Ir-194	3E-5	3E-5
Iron (26)	Fe-55	8E-4	2E-3
	Fe-59	6E-5	5E-5
Lanthanum (57)	La-140	2E-5	2E-5
Lead (82)	Pb-203	4E-4	4E-4
	Pb-210	1E-7	2E-4
	Pb-212	2E-5	2E-5
Lutetium (71)	Lu-177	1E-4	1E-4
Manganese (25)	Mn-52	3E-5	3E-5
	Mn-54	1E-4	1E-4
	Mn-56	1E-4	1E-4
Mercury (80)	Hg-197m	2E-4	2E-4
	Hg-197	3E-4	5E-4
	Hg-203	2E-5	1E-4
Molybdenum (42)	Mo-99	2E-4	4E-5
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

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
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
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

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

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

2015 SGS AND HCGS RADIOACTIVE EFFLUENT RELEASE REPORT

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. ($\mu\text{Ci/ml}$)	Insoluble Conc. ($\mu\text{Ci/ml}$)
	U-236	3E-5	3E-5
	U-238	4E-5	4E-5
	U-240	3E-5	3E-5
	U-natural	3E-5	3E-5
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 radio-nuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radio - active half-life greater than 2 hours		3E-6	3E-6
Any single radio- nuclide not listed above, which decays by alpha emission or spontaneous fission.		3E-8	3E-8

Notes:

1. If the identity of any radionuclide is not known, the limiting values for purposes of this table shall be: 3E-8 $\mu\text{Ci/ml}$.
2. If the identity and concentration of each radionuclide were 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 D

2014 Radiological Groundwater Protection Program (RGPP) Report

Page Intentionally Left Blank

2015 Radiological Groundwater Protection Program (RGPP) Report

Results of the Integrated Tritium Management Program

With

2015 Radiological Groundwater Protection Program (RGPP)

And

2015 Monitoring Well and Remedial Action Work Plan

Page Intentionally Left Blank

Table of Contents

I.	Introduction	135
II.	Radiological Groundwater Protection Program	136
	1. Objectives of the Radiological Groundwater Protection Program	136
	2. Sample Collection	137
	3. New Wells	137
	4. Sample Analysis	137
	5. Data Evaluation	137
	Detection limits	137
	Laboratory Measurements Uncertainty	138
	6. RGPP Data Quality	138
III.	Discussion	139
	1. Groundwater Results - RGPP	139
	A. Hope Creek Generating Station RGPP Wells	139
	B. Salem Generating Station RGPP Wells	140
	2. Mass Flux Estimation of Tritium to the Delaware River	141
	3. Investigations	142
	A. Groundwater Monitoring Well Data (Non-RGPP)	142
	B. Focused Remediation at Well AC	142
	C. Well S-V Extended Purge	142
	D. Past Spills and Leaks: Impacts to Groundwater	142
IV.	RGPP 2016 Status	143
V.	References	143

List of Tables

Table 1. Well Construction Details, Hope Creek Generating Station	144
Table 2. Well Construction Details, Salem Generating Station	145
Table 3. Well Construction Details, Investigation and Monitoring Wells	146
Table 4. Relevant Groundwater Evaluation Criteria, Salem and Hope Creek Generating Stations.....	149
Table 5. Tritium Analytical Results, Hope Creek RGPP Wells	150
Table 6. Tritium Analytical Results, Salem RGPP Wells	152
Table 7. Tritium Analytical Results, Investigation and Monitoring Well.....	154

List of Figures

Figure 1. Well Location Map, Hope Creek Generating Station.....	161
Figure 2. Well Location Map, Salem Generating Station.....	162

I. Introduction

This report presents results of the 2015 groundwater monitoring activities performed by PSEG Nuclear at both the Hope Creek Generating Station (HCGS) and Salem Generating Station (SGS); collectively referred to as "the Site". Well locations at the Station are shown on Figures 1 and 2, respectively. To tie together the various groundwater monitoring programs at the Station, PSEG implemented the Integrated Tritium Management Program (ITMP) which integrates the following four broad programs:

- The Radiological Groundwater Protection Program (RGPP) is a program that was developed to ensure the timely detection of an unpermitted release of radioactive material;
- The Remedial Action Work Plan (RAWP) is a program that monitors the remediation of the historical release from the Salem Unit 1 spent fuel pool;
- Investigation wells were installed as part of independent investigations into groundwater quality, that are not included as part of the RGPP or RAWP; and
- Early Site Permit (ESP) wells which are periphery wells that were installed outside of the protected area to support the potential licensing of a new nuclear plant.

Well construction details for the Hope Creek RGPP wells and Salem RGPP wells are presented on Tables 1 and 2, respectively. Well construction details for the wells that are not specifically part of the RGPP are presented on Table 3.

PSEG initiated the RGPP in 2006 to characterize groundwater at, and in the vicinity of the Site with respect to historical releases of radionuclides and to provide the mechanism to detect such releases, if one were to 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, PSEG operations personnel at SGS identified a release of tritiated water from the Unit 1 Spent Fuel Pool to the environment. PSEG developed a RAWP to remediate the tritium in groundwater, which was reviewed by the United States Nuclear 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 to control the migration of groundwater in the shallow, water-bearing unit and to reduce the remaining mass of tritiated groundwater. The operation and performance of the GRS is documented in the Remedial Action Progress Reports (RAPRs) provided to the NRC and NJDEP BNE by PSEG. PSEG generates an effluent release permit for the residual tritium in groundwater discharging to the Delaware River. The permit values are included in the liquid effluent data reported earlier in this document.

The Site is located in a flat, largely undeveloped region of southern New Jersey, which is bordered on the west and south by the Delaware River and on the east and north by extensive marshlands. The Site obtains cooling water from the Delaware River.

The **Station** is underlain by over 1,000 feet of inter-layered sand, silt and clay. PSEG owns eight production/potable wells at the Site, which range in depth from 260 feet below ground surface (bgs) to 1,800 feet bgs. These wells are installed in deeper formations isolated by confining units beneath the Vincentown Formation.

The results from a computer based well search identified the nearest off-site permitted potable well is located approximately 3.5 miles away. Shallow groundwater and the Vincentown aquifer (the two most shallow water bearing units underlying the Site) flow toward and discharge to the Delaware River, thus reducing the potential that Site operations have or will influence off-site potable wells.

II. Radiological Groundwater Protection Program

This section of the annual report is prepared to summarize the status, activities, and groundwater analytical results collected in 2015 at the Site. This report also describes any changes made to the monitoring program during the 2015 reporting year.

1. Objectives of the Radiological Groundwater Protection Program

The long-term sampling program objectives are as follows:

- A. Identify suitable locations to monitor and evaluate potential impacts from Site operations before significant radiological impact to the environment or potential drinking water sources can occur.
- B. Refine the conceptual understanding of local hydrogeology and maintain current knowledge of potential flowpaths on the surface and in groundwater beneath the Site.
- C. Evaluate systems, structures, components (SSCs) and work practices which have the potential to release licensed radioactive material to the groundwater and develop strategies to mitigation potential releases to the environment.
- D. Perform routine groundwater monitoring and evaluate analytical results.
- E. Report any leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
- F. Take necessary corrective actions to protect groundwater resources.

2. Sample Collection

In 2006, the RGPP monitoring wells (**Tables 1 and 2**) were installed at the Site as part of site investigation activities. Details pertaining to these activities are documented in the Site Investigation Reports (ARCADIS 2006A and 2006B). Groundwater samples are collected from all RGPP monitoring wells at least semi-annually, with additional monitoring conducted as appropriate. The groundwater sample collection schedule is adaptively managed to ensure that representative data are collected to provide the information necessary to evaluate groundwater quality conditions. Monitoring wells are sampled following the low-flow purging and sampling techniques in accordance with the Field Sampling Procedures Manual (NJDEP 2005). This methodology is consistent with protocols established in the RAWP.

3. New Wells

No new wells were added as part of the RGPP during 2015.

4. Sample Analysis

Groundwater samples collected from RGPP wells are analyzed for plant-related gamma emitting radionuclides (semi-annually), strontium (annually), and iron 55 (biennially) and tritium (every sample) by an off-site radiochemical analytical laboratory.

The samples are maintained under chain of custody procedures throughout sample handling, screening, shipping and laboratory analysis process. Samples are submitted to Site Chemistry for radiological analysis screening prior to shipment to Teledyne Brown Engineering (TBE) located in Knoxville, Tennessee, for radiological analysis. Analytical laboratories are subject to internal quality assurance programs and inter-laboratory cross-check programs. Site personnel review and evaluate analytical data obtained from the laboratory.

5. Data Evaluation

Analytical results are reviewed for adverse trends or anomalies. 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 Offsite Dose Calculation Manual (ODCM) specifies detection

capabilities for each isotope that may be produced by the Site. While the detection capability for tritium specified in the ODCM is 3,000 picocuries per liter (pCi/L) in water, RGPP tritium analyses are performed to a lower value of 200 pCi/L. Each well has a statistically derived action level. When an action level is exceeded, PSEG may increase monitoring frequency and evaluates potential sources of the elevated tritium. Relevant groundwater evaluation criteria are listed in **Table 4**.

- **Laboratory Measurements Uncertainty**

Statistically, the value of a measurement is expressed as a range with a stated level of confidence. PSEG is required 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.

6. RGPP Data Quality

Groundwater samples consist of at least four aliquots. One of the aliquots is submitted to the respective Site's onsite chemistry laboratory for initial screening, which includes tritium and gamma spectroscopy analysis. The second aliquot is sent to TBE for tritium analysis. In accordance with NJDEP request, the third aliquot is submitted for split sample analysis to GEL Laboratories located in Charleston, South Carolina. The fourth aliquot is held as a back-up, "retained" sample until all the analytical results are received and determined to be valid.

All radionuclide results are compared to the following limitations defined as part of the RGPP:

- 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. Solely exceeding an Administrative Control Limit does not initiate external communication, unless the external reporting limit is also exceeded.
- 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. If a confirmed tritium result, collected from a RGPP well, exceeds the Courtesy Communication Limit of 3,000 pCi/L, PSEG provides a courtesy communication by telephone no later than the end of the next business day to NJDEP-BNE. 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, the ODCMs, and Site procedures.

III. Discussion

The locations of the RGPP monitoring wells located at Hope Creek and Salem Generating Site are depicted on **Figures 1** and **2**, respectively. Additionally, well construction details for the Hope Creek RGPP wells and Salem RGPP wells are presented on **Tables 1** and **2**, respectively. The relevant radiological parameters used to evaluate the groundwater analytical results are provided in **Table 4**. The groundwater tritium analytical results for Hope Creek and Salem Generating Stations are shown on **Tables 5** and **6**, respectively.

1. Groundwater Results - RGPP

Groundwater samples were collected from all RGPP monitoring wells during 2015 in accordance with the Site and LTS procedures for the RGPP. Sample results are discussed below.

A. Hope Creek Generating Station RGPP Wells

Tritium analytical results for groundwater samples collected during 2015 from Hope Creek RGPP monitoring wells are summarized below and are presented in **Table 5**.

- Tritium was not detected in groundwater samples collected from 8 of the 13 Hope Creek RGPP wells (wells BH, BK, BL, BP, BQ, BR, BS, and BT).
- Well BI was sampled monthly during 2015. Tritium was not detected in samples taken in January, February, August, September, November, and December 2015. Detected concentrations ranged from 239 pCi/L (July 2015) to 681 pCi/L (March 2015). Well BI is located west of the reactor containment and is a sentinel (source) well for facilities and buried piping.
- Tritium concentrations detected in well BJ ranged from 901 pCi/L (October 2015) to 1,550 pCi/L (March 2015) and averaged 1,195 pCi/L, during 2015. Well BJ is located near the Hope Creek main permitted gaseous effluent vent (i.e., south plant vent).
- Well BM was sampled monthly during 2015. Tritium was not detected in samples taken in January 2015 and May 2015. Tritium was detected at concentrations ranging from 190 pCi/L (September 2015) to 404 pCi/L (October 2015). Well BM is located west of the abandoned Unit 2 reactor building and is a sentinel (source) well for facilities and buried piping.
- Well BN was sampled monthly during 2015. Tritium concentrations detected in well BN ranged from 361 pCi/L (November 2015) to 1,130

pCi/L (April 2015) and averaged 636 pCi/L. Well BN is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.

- Well BO was sampled monthly during 2015. Tritium was not detected in samples taken in January, May, June, July, August, September, and October 2015. Detected concentrations ranged from 193 pCi/L (March 2015) to 600 pCi/L (December 2015). Well BO is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.
- There were no analytical results for which a Courtesy Communication (greater than 3,000 pCi/L tritium) was required as part of the Hope Creek RGPP.
- As part of an ongoing investigation on tritium levels observed in non RGPP Well BY, a voluntary communication was made on March 4, 2015 to the NJDEP-BNE and NRC in accordance with NEI 07-07 to notify the discovery of tritium in excess of 10,000,000 pCi/L at ground level at the northeast corner of the Hope Creek turbine building. Details on the evaluation and corrective actions are contained earlier in the report.

With the exception of tritium, no plant-related radionuclides were detected in any Hope Creek RGPP well sampled in 2015.

B. Salem Generating Station RGPP Wells

Tritium analytical results for groundwater samples collected during 2015 from Salem RGPP monitoring wells are summarized below and are presented on Table 6.

- Tritium was not detected in groundwater samples collected from 6 of the 13 Salem RGPP wells (wells BA, BB, BF, BU, T, and Y).
- Well AL was sampled monthly during 2015. Tritium was detected at concentrations ranging from 342 pCi/L (March 2015) to 939 pCi/L (October 2015) and averaged 574 pCi/L. Well AL is located south of the Salem Unit 1 reactor building and is a sentinel (source) well.
- Well BC was sampled monthly during 2015. Tritium was detected at concentrations ranging from 256 pCi/L (October 2015) to 812 pCi/L (January 2015) and averaged 473 pCi/L. 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.
- Well BD was sampled monthly during 2015. Tritium was detected at concentrations ranging from 489 pCi/L (December 2015) to 981 pCi/L (July 2015) and averaged 705 pCi/L. 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.

- Well BE was sampled four times during 2015. Tritium was not detected in a sample taken in November 2015. Detected concentrations ranged from 234 pCi/L (February 2015) to 467 pCi/L (May 2015). Well BE is located to the west of Salem Unit 2 reactor building and is a perimeter well.
- Well BG was sampled monthly during 2015. Tritium was detected at concentrations ranging from 263 pCi/L (February 2015) to 444 pCi/L (May 2015) and averaged 364 pCi/L. Well BG is located northwest of Salem Unit 2 reactor building and is a perimeter well.
- Well U was sampled monthly during 2015. Tritium was not detected in the sample collected in November 2015. Tritium was detected at concentrations ranging from 215 pCi/L (December 2015) to 445 pCi/L (October 2015). Well U is located north of Salem Unit 2 reactor building and is a sentinel (source) well for the House Heating Boilers.
- Well Z was sampled monthly during 2015. Tritium was detected at concentrations ranging from 538 pCi/L (January 2015) to 928 pCi/L (July 2015) and averaged 743 pCi/L. Well Z is located west of the Salem Unit 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 Salem RGPP.

With the exception of tritium, no plant-related gamma emitters or other plant related radionuclides were detected during 2015 in any Salem RGPP wells.

2. Mass Flux Estimation of Tritium to the Delaware River

PSEG uses transect methods to calculate the mass flux of tritium to the Delaware River in the shallow, water bearing unit and the deeper basal sand unit and Vincentown Formation. To calculate the mass flux, the tritium concentration was conservatively estimated using the average concentration detected in monitoring wells located nearest to the Delaware River during each quarter. During 2015, the mass flux within the shallow, water bearing unit and deeper groundwater was estimated to be 0.01 Ci and 0.13 Ci, respectively. Therefore, the total potential estimated mass flux of tritium in groundwater reaching the Delaware River during 2015 was 0.14 Ci.

The calculated mass flux of 0.14 Ci (total of four quarterly estimates) was included in the Site's liquid effluent discharge and reported in the data tables of the ARERR.

3. Investigations

A. Groundwater Monitoring Well Data (Non-RGPP)

As previously discussed, PSEG Nuclear monitors a series of wells located at the Site. The ITMP is comprised of the RGPP wells, the RAWP wells, the ESP wells and a series of monitoring wells that were installed to investigate groundwater quality, but are not included as part of the RGPP or RAWP. Well construction details and tritium analytical results for the wells described above that are not specifically part of the RGPP are presented on **Table 3** and **Table 7**, respectively.

B. Focused Remediation at Well AC

On March 30, 2015, PSEG resumed the focused remediation at well AC by purging approximately 500 gallons of groundwater per week. PSEG temporarily suspended focused remediation activities on November 13, 2015 to eliminate potential complications caused by freezing weather conditions. Purged groundwater was transferred to the non-radiological liquid waste basin for release through the PSEG permitted liquid effluent outfall. During 2015 focused remediation activities, a total of approximately 17,385 gallons were purged and approximately 0.00449 curies of tritium were removed from groundwater.

C. Well S-V Extended Purge

On July 6, 2015, PSEG implemented extended purge activities at well S-V, the objective of which was to remove approximately 20,000 gallons of groundwater from well S-V over 72 hours and to monitor tritium concentrations during the purge activities. Water generated during the purging activities was pumped to the non-radiological liquid waste basin for release through the PSEG permitted liquid effluent outfall. During the well S-V extended purge activities, approximately 21,783 gallons of groundwater were purged. Tritium concentrations remained consistent with scheduled monthly samples collected via low flow sampling procedures. This result indicates that tritium concentrations in the vicinity of well S-V are similar to the concentrations detected in the well.

D. Past Spills and Leaks: Impacts to Groundwater

In 2015, there were no known active unmonitored or unevaluated releases into the groundwater at the Site.

As part of installation of service water isolation valves, tritium was detected intermittently in the dewatering effluent associated with the excavation. Conservative effluent release permits were created to capture the tritium

released and the associated dose impacts. The results of these permits are contained in the release totals earlier in the report.

In conclusion, PSEG has not detected an unmonitored release of radionuclides to the environment from the 2015 operation of the Site.

IV. RGPP 2016 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 less than or equal to 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 as needed based on analytical results.

V. References

1. ARCADIS, 2006A. Site Investigation Report July 2006. PSEG Nuclear LLC. Hope Creek Generating Station, Hancock's Bridge, New Jersey.
2. ARCADIS, 2006B. Site Investigation Report July 2006. PSEG Nuclear LLC. Salem Generating Station, Hancock's Bridge, New Jersey.
3. ARCADIS, 2011. Addendum to the 2006 Site Investigation Reports. PSEG Nuclear LLC. Salem and Hope Creek Generating Stations, Hancock's Bridge, New Jersey. December 2011.
4. ARCADIS, 2014. Remedial Action Work Plan Addendum. PSEG Nuclear LLC. Salem, Hancock's Bridge, New Jersey. April 10, 2014.
5. NEI, 2007. NEI 07-07, Industry Groundwater Protection Initiative – Final Guidance Document, Nuclear Energy Institute, Washington, DC, June 2007.

Table 1. Well Construction Details, Hope Creek Generating Station

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	Monitoring Purpose	Source Targets
Well BH	May-06	Sch-40 PVC	4	37.0	27.0 – 37.0	101.16	11.24	Perimeter	NA
Well BI	May-06	Sch-40 PVC	4	37.0	27.0 – 37.0	103.07	13.15	Source	Facilities; Piping
Well BJ	May-06	Sch-40 PVC	4	38.0	28.0 – 38.0	102.97	13.05	Source	Condensate Storage & Transfer; Facilities; Piping
Well BK	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	101.42	11.50	Perimeter	NA
Well BL	May-06	Sch-40 PVC	4	37.0	27.0 – 37.0	102.69	12.77	Perimeter	NA
Well BM	May-06	Sch-40 PVC	4	37.5	27.5 – 37.5	102.75	12.83	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	35.0	25.0 – 35.0	97.98	8.06	Perimeter/Source	Building Sewage
Well BP	May-06	Sch-40 PVC	4	38.0	28.0 – 38.0	99.06	9.14	Perimeter/Source	Building Sewage
Well BQ	May-06	Sch-40 PVC	4	42.0	32.0 – 42.0	105.62	15.70	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	25.0 – 35.0	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
 amsl Above mean sea level (NAVD 1988)
 NA Not applicable

Table 2. Well Construction Details, Salem Generating Station

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	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 ¹	May-03	Sch-40 PVC	2	32.2	27.2 - 32.2	101.46	11.54	Source	Facilities; House Heating Boiler
Well Y	Sep-03	Sch-40 PVC	2	37.0	27.0 - 37.0	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 ¹	May-06	Sch-40 PVC	4	47.0	37.0 - 47.0	102.18	12.26	Perimeter	NA
Well BC	May-06	Sch-40 PVC	4	38.0	28.0 - 38.0	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	27.0 - 37.0	98.31	8.39	Perimeter	NA
Well BF ¹	May-06	Sch-40 PVC	4	42.0	32.0 - 42.0	101.45	11.53	Perimeter	NA
Well BG ¹	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	103.34	13.42	Perimeter	NA
Well BU	May-06	Sch-40 PVC	4	36.0	26.0 - 36.0	100.16	10.24	Upgradient	NA

Notes:

MP Measuring Point

bgs Below ground surface

RPD Relative to plant datum

amsl Above mean sea level (NAVD 1988)

NA Not applicable

¹ Monitoring wells BB, BF, and BG were surveyed in July/August 2013 following retrofitting or repair activities.

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well K	Feb-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown ¹	102.00	12.08
Well L	Jan-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown ¹	101.46	11.54
Well M	May-03	Sch-40 PVC	1	20.0	10.0 - 20.0	Cofferdam ²	102.17	12.25
Well N	Jan-03	Sch-40 PVC	2	20.0	10.0 - 20.0	Cofferdam ²	101.65	11.73
Well O	Jan-03	Sch-40 PVC	2	20.0	10.0 - 20.0	Cofferdam ²	101.33	11.41
Well P	Mar-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown ¹	101.13	11.21
Well Q	Mar-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown ¹	106.59	16.67
Well R	Jun-03	Sch-40 PVC	1	19.0	9.0 - 19.0	Cofferdam ²	102.35	12.43
Well S ⁴	May-03	Sch-40 PVC	2	34.7	24.7 - 34.7	Shallow ³	99.04	9.12
Well S-V	May-14	Sch-40 PVC	4	85.0	75.0 - 85.0	Vincentown ¹	101.00	11.08
Well V ⁵	Jun-03	Sch-40 PVC	2	79.5	69.5 - 79.5	Vincentown ¹	101.72	11.80
Well W ⁵	Jun-03	Sch-40 PVC	2	35.0	25.0 - 35.0	Shallow ³	98.49	8.57
Well AA ⁴	Sep-03	Sch-40 PVC	2	36.0	26.0 - 36.0	Shallow ³	99.07	9.15
Well AA-V	May-13	Sch-40 PVC	2	85.0	75.0 - 85.0	Vincentown ¹	100.80	10.88
Well AB ⁴	Oct-03	Sch-40 PVC	2	42.0	32.0 - 42.0	Shallow ³	98.93	9.01
Well AC ⁴	Sep-03	Sch-40 PVC	2	24.0	14.0 - 24.0	Cofferdam ²	98.77	8.85
Well AD ⁴	Oct-03	Sch-40 PVC	6	43.0	33.0 - 43.0	Shallow ³	98.99	9.07
Well AE	Oct-03	Sch-40 PVC	2	27.5	17.5 - 27.5	Cofferdam ²	101.54	11.62
Well AF	Oct-03	Sch-40 PVC	2	45.0	35.0 - 45.0	Shallow ³	101.61	11.69
Well AG-Shallow	Feb-04	Sch-40 PVC	1	24.2	14.2 - 24.2	Shallow ³	99.29	9.37
Well AG-Deep	Feb-04	Sch-40 PVC	1	40.0	30.0 - 40.0	Shallow ³	99.20	9.28
Well AH-Shallow	Feb-04	Sch-40 PVC	1	24.5	14.5 - 24.5	Shallow ³	102.58	12.66
Well AH-Deep	Feb-04	Sch-40 PVC	1	40.0	30.0 - 40.0	Shallow ³	102.70	12.78
Well AI	Jan-04	Sch-40 PVC	4	22.0	12.0 - 22.0	Cofferdam ²	98.79	8.87

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well AJ	Jan-04	Sch-40 PVC	4	35.3	15.3 - 35.3	Shallow ³	98.85	8.93
Well AM	Jan-04	Sch-40 PVC	4	20.9	10.9 - 20.9	Cofferdam ²	98.55	8.63
Well AN	Jun-04	Sch-40 PVC	4	25.0	10.0 - 25.0	Cofferdam ²	98.76	8.84
Well AO	Jun-04	Sch-40 PVC	4	21.0	11.0 - 21.0	Cofferdam ²	98.82	8.90
Well AP	Jun-04	Sch-40 PVC	4	40.0	15.0 - 40.0	Shallow ³	98.65	8.73
Well AQ	Jun-04	Sch-40 PVC	4	45.0	20.0 - 45.0	Shallow ³	99.05	9.13
Well AR	Jun-04	Sch-40 PVC	4	43.0	18.0 - 43.0	Shallow ³	99.22	9.30
Well AS	Jun-04	Sch-40 PVC	4	41.5	16.5 - 41.5	Shallow ³	99.44	9.52
Well AT	Jun-04	Sch-40 PVC	4	44.0	19.0 - 44.0	Shallow ³	99.25	9.33
Well BW ⁵	Dec-06	Sch-40 PVC	1	10.0	5.0 - 10.0	Shallow ³	101.62	11.70
Well BX ⁵	Dec-06	Sch-40 PVC	1	10.0	5.0 - 10.0	Shallow ³	101.79	11.87
Well BY	Nov-10	Sch-40 PVC	4	40.0	35.0 - 40.0	Shallow ³	103.36	13.44
Well BZ	Nov-10	Sch-40 PVC	4	36.0	31.0 - 36.0	Shallow ³	104.29	14.37
Well CA ⁵	Dec-06	Sch-40 PVC	4	38.0	28.0 - 38.0	Shallow ³	101.96	12.04
Well CB ⁶	Dec-06	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincetown ¹	98.98	9.06
Well DA ⁵	Nov-10	Sch-40 PVC	4	17.0	12.0 - 17.0	Cofferdam ²	99.04	9.12
Well DB	Nov-10	Sch-40 PVC	4	21.0	16.0 - 21.0	Cofferdam ²	101.69	11.77
Well DC	Nov-10	Sch-40 PVC	4	22.0	17.0 - 22.0	Cofferdam ²	100.90	10.98
Well DD	Nov-10	Sch-40 PVC	4	19.0	14.0 - 19.0	Cofferdam ²	101.23	11.31
Well DE	Nov-10	Sch-40 PVC	4	18.0	13.0 - 18.0	Cofferdam ²	101.43	11.51
Well DF	Nov-10	Sch-40 PVC	4	19.0	14.0 - 19.0	Cofferdam ²	101.32	11.40
Well DG	Nov-10	Sch-40 PVC	2	13.5	11.5 - 13.5	Cofferdam ²	98.98	9.06
Well DH	Oct-10	Sch-40 PVC	4	21.0	16.0 - 21.0	Cofferdam ²	101.54	11.62

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well DI	Oct-10	Sch-40 PVC	4	18.0	13.0 - 18.0	Cofferdam ²	101.64	11.72
Well DJ	Oct-10	Sch-40 PVC	2	11.0	6.0 - 11.0	Cofferdam ²	99.03	9.11

Notes:

MP Measuring point

bgs Below ground surface

RPD Relative to plant datum

amsl Above mean sea level (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, AA, AB, AC, and AD were converted from above-grade to flush-grade in February 2004.⁵ Monitoring wells BW, BX, CA, DA, V, and W were surveyed in July/August 2013 following retrofitting or repair activities.⁶ Monitoring well CB was abandoned in May 2013.

Table 4. Relevant Groundwater Evaluation Criteria, Salem and Hope Creek Generating Stations

Isotope	RGPP LLD (pCi/L)	PSEG Reporting Level (pCi/L)
Tritium	200	30,000
Total Strontium	2	8
Mn-54	15	1,000
Fe-59	30	400
Co-60	15	300
Zn-65	30	300
Nb-95	15	400
Zr-95	15	400
Cs-134	15	30
Cs-137	18	50
Ba-140	60	200
La-140	15	200

Notes:

LLD Lower Limit of Detection
pCi/L Picocuries per liter

Table 5. Tritium Analytical Results, Hope Creek RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL BH	02/10/15	< 194	pCi/L	WELL BM continued	05/13/15	< 180	pCi/L
	05/13/15	< 179	pCi/L		06/09/15	211	pCi/L
	08/11/15	< 192	pCi/L		07/14/15	291	pCi/L
	11/03/15	< 180	pCi/L		08/11/15	286	pCi/L
WELL BI	01/13/15	< 183	pCi/L		09/16/15	190	pCi/L
	02/11/15	< 187	pCi/L		10/05/15	404	pCi/L
	03/16/15	681	pCi/L		11/02/15	402	pCi/L
	04/13/15	436	pCi/L		12/11/15	311	pCi/L
	05/13/15	340	pCi/L	WELL BN	01/13/15	529	pCi/L
	06/09/15	395	pCi/L		02/10/15	709	pCi/L
	07/14/15	239	pCi/L		03/12/15	859	pCi/L
	08/11/15	< 183	pCi/L		04/13/15	1,130	pCi/L
	09/16/15	< 191	pCi/L		05/12/15	744	pCi/L
	10/06/15	387	pCi/L		06/08/15	629	pCi/L
	11/03/15	< 178	pCi/L		07/13/15	582	pCi/L
	12/11/15	< 183	pCi/L		08/10/15	451	pCi/L
WELL BJ	01/13/15	1,410	pCi/L		09/04/15	598	pCi/L
	02/26/15	1,300	pCi/L		10/05/15	508	pCi/L
	03/16/15	1,550	pCi/L		11/02/15	361	pCi/L
	04/13/15	1,430	pCi/L		12/07/15	528	pCi/L
	05/13/15	1,120	pCi/L	WELL BO	01/13/15	< 177	pCi/L
	06/09/15	945	pCi/L		02/10/15	501	pCi/L
	07/14/15	1,120	pCi/L		03/12/15	193	pCi/L
	08/11/15	1,140	pCi/L		04/13/15	278	pCi/L
	09/14/15	970	pCi/L		05/12/15	< 171	pCi/L
	10/06/15	901	pCi/L		06/08/15	< 190	pCi/L
	11/03/15	1,130	pCi/L		07/13/15	< 193	pCi/L
	12/11/15	1,320	pCi/L		08/11/15	< 188	pCi/L
WELL BK	05/13/15	< 179	pCi/L		09/04/15	< 192	pCi/L
	11/03/15	< 178	pCi/L		10/05/15	< 177	pCi/L
WELL BL	05/13/15	< 179	pCi/L		11/02/15	313	pCi/L
	11/03/15	< 183	pCi/L		12/07/15	600	pCi/L
WELL BM	01/13/15	< 182	pCi/L	WELL BP	01/13/15	< 177	pCi/L
	02/11/15	279	pCi/L		02/10/15	< 196	pCi/L
	03/16/15	233	pCi/L		03/13/15	< 185	pCi/L
	04/13/15	395	pCi/L		04/13/15	< 180	pCi/L

Table 5. Tritium Analytical Results, Hope Creek RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL BP continued	05/12/15	< 173	pCi/L	WELL BR	01/13/15	< 193	pCi/L
	06/08/15	< 194	pCi/L		02/10/15	< 193	pCi/L
	07/13/15	< 191	pCi/L		03/13/15	< 186	pCi/L
	08/10/15	< 187	pCi/L		04/13/15	< 180	pCi/L
	09/04/15	< 191	pCi/L		05/12/15	< 199	pCi/L
	10/05/15	< 176	pCi/L		06/08/15	< 181	pCi/L
	11/02/15	< 188	pCi/L		07/13/15	< 189	pCi/L
	12/07/15	< 186	pCi/L		08/11/15	< 192	pCi/L
WELL BQ	01/20/15	< 196	pCi/L		09/04/15	< 193	pCi/L
	02/09/15	< 197	pCi/L		10/05/15	< 180	pCi/L
	03/16/15	< 185	pCi/L		11/03/15	< 190	pCi/L
	04/13/15	< 177	pCi/L		12/07/15	< 189	pCi/L
	05/11/15	< 174	pCi/L	WELL BS	05/12/15	< 170	pCi/L
	06/08/15	< 196	pCi/L		11/02/15	< 188	pCi/L
	07/13/15	< 188	pCi/L	WELL BT	03/16/15	< 189	pCi/L
	08/10/15	< 194	pCi/L		04/13/15	< 184	pCi/L
	09/14/15	< 183	pCi/L		05/12/15	< 173	pCi/L
	10/12/15	< 197	pCi/L		11/03/15	< 189	pCi/L
	11/09/15	< 183	pCi/L				
	12/14/15	< 187	pCi/L				

Notes:

pCi/L Picocuries per liter

< Tritium was not detected above the indicated laboratory lower limit of detection (LLD).

239 Bold values indicate tritium was detected.

Table 6. Tritium Analytical Results, Salem RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AL	01/15/15	576	pCi/L	WELL BD continued	10/07/15	760	pCi/L
	02/19/15	550	pCi/L		11/12/15	733	pCi/L
	03/19/15	342	pCi/L		12/14/15	489	pCi/L
	04/14/15	428	pCi/L	WELL BE	02/12/15	234	pCi/L
	05/14/15	706	pCi/L		05/14/15	467	pCi/L
	06/15/15	601	pCi/L		08/13/15	305	pCi/L
	07/15/15	673	pCi/L	WELL BF	11/09/15	< 199	pCi/L
	08/14/15	449	pCi/L		05/14/15	< 193	pCi/L
	09/16/15	480	pCi/L	WELL BG	11/09/15	< 196	pCi/L
	10/08/15	939	pCi/L		01/14/15	374	pCi/L
	11/10/15	440	pCi/L		02/11/15	263	pCi/L
	12/14/15	698	pCi/L		03/16/15	325	pCi/L
WELL BA	05/14/15	< 195	pCi/L		04/13/15	300	pCi/L
	11/05/15	< 192	pCi/L		05/13/15	444	pCi/L
WELL BB	05/14/15	< 197	pCi/L		06/09/15	364	pCi/L
	11/05/15	< 187	pCi/L		07/14/15	396	pCi/L
WELL BC	01/16/15	812	pCi/L		08/11/15	386	pCi/L
	02/18/15	565	pCi/L		09/11/15	416	pCi/L
	03/16/15	543	pCi/L		10/06/15	391	pCi/L
	04/17/15	558	pCi/L		11/03/15	326	pCi/L
	05/14/15	618	pCi/L		12/14/15	378	pCi/L
	06/10/15	503	pCi/L	WELL BU	05/12/15	< 190	pCi/L
	07/23/15	470	pCi/L		11/03/15	< 190	pCi/L
	08/13/15	461	pCi/L	WELL T	01/14/15	< 190	pCi/L
	09/15/15	266	pCi/L		02/11/15	< 190	pCi/L
	10/06/15	256	pCi/L		03/16/15	< 187	pCi/L
	11/09/15	348	pCi/L		04/14/15	< 181	pCi/L
	12/15/15	273	pCi/L		05/13/15	< 200	pCi/L
WELL BD	01/21/15	523	pCi/L		06/09/15	< 190	pCi/L
	02/26/15	663	pCi/L		07/14/15	< 194	pCi/L
	03/19/15	739	pCi/L		08/12/15	< 180	pCi/L
	04/16/15	699	pCi/L		09/16/15	< 190	pCi/L
	05/14/15	847	pCi/L		10/06/15	< 196	pCi/L
	06/10/15	763	pCi/L		11/04/15	< 198	pCi/L
	07/16/15	981	pCi/L		12/14/15	< 185	pCi/L
	08/17/15	763	pCi/L	WELL U	01/14/15	298	pCi/L
	09/15/15	505	pCi/L		02/18/15	257	pCi/L
WELL U	03/16/15	284	pCi/L	WELL Z	01/21/15	538	pCi/L

Table 6. Tritium Analytical Results, Salem RGPP Wells

Well ID	Date	Concentration	Well ID	Date	Concentration
continued					
	04/13/15	298 pCi/L		02/18/15	695 pCi/L
	05/13/15	369 pCi/L		03/19/15	722 pCi/L
	06/11/15	385 pCi/L		04/16/15	805 pCi/L
	07/21/15	346 pCi/L		05/14/15	731 pCi/L
	08/12/15	308 pCi/L		06/09/15	865 pCi/L
	09/14/15	312 pCi/L		07/17/15	928 pCi/L
	10/06/15	445 pCi/L		08/13/15	824 pCi/L
	11/04/15	< 200 pCi/L		09/17/15	685 pCi/L
	12/15/15	215 pCi/L		10/08/15	869 pCi/L
				11/05/15	668 pCi/L
WELL Y	01/21/15	< 181 pCi/L		12/10/15	583 pCi/L
	02/18/15	< 172 pCi/L			
	03/19/15	< 189 pCi/L			
	04/16/15	< 179 pCi/L			
	05/14/15	< 199 pCi/L			
	06/09/15	< 189 pCi/L			
	07/17/15	< 194 pCi/L			
	08/13/15	< 199 pCi/L			
	09/17/15	< 188 pCi/L			
	10/08/15	< 187 pCi/L			
	11/05/15	< 189 pCi/L			
	12/10/15	< 184 pCi/L			

Notes:

pCi/L Picocuries per liter

< Tritium was not detected above the indicated laboratory lower limit of detection (LLD).

583 Bold values indicate tritium was detected.

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AA	01/15/15	1,100	pCi/L	WELL AC continued	05/15/15	66,500	pCi/L
	02/13/15	1,200	pCi/L		06/12/15	57,000	pCi/L
	03/18/15	1,260	pCi/L		07/17/15	54,200	pCi/L
	04/14/15	1,110	pCi/L		08/14/15	44,400	pCi/L
	05/20/15	1,460	pCi/L		09/11/15	47,900	pCi/L
	06/11/15	1,340	pCi/L		10/09/15	43,900	pCi/L
	07/20/15	1,340	pCi/L		11/06/15	48,700	pCi/L
	08/12/15	1,310	pCi/L		12/08/15	52,800	pCi/L
	10/13/15	1,500	pCi/L	WELL AC-MT*	04/17/15	91,800	pCi/L
	11/10/15	1,250	pCi/L		05/15/15	62,100	pCi/L
	12/10/15	1,410	pCi/L		06/12/15	57,200	pCi/L
WELL AA-V	01/15/15	10,600	pCi/L		07/17/15	56,200	pCi/L
	02/18/15	11,500	pCi/L		08/14/15	41,800	pCi/L
	03/18/15	11,100	pCi/L		09/11/15	49,100	pCi/L
	04/14/15	9,310	pCi/L		10/09/15	40,100	pCi/L
	05/20/15	10,500	pCi/L		11/06/15	49,500	pCi/L
	06/11/15	9,820	pCi/L	WELL AD	01/16/15	12,800	pCi/L
	07/20/15	8,930	pCi/L		02/13/15	13,100	pCi/L
	08/12/15	10,700	pCi/L		03/18/15	12,200	pCi/L
	09/09/15	8,780	pCi/L		04/10/15	10,000	pCi/L
	10/13/15	4,470	pCi/L		05/15/15	11,200	pCi/L
	11/10/15	2,380	pCi/L		06/15/15	< 195	pCi/L
	12/10/15	2,130	pCi/L		07/23/15	13,700	pCi/L
WELL AB	01/16/15	8,260	pCi/L		08/13/15	12,700	pCi/L
	02/13/15	8,360	pCi/L		09/10/15	14,200	pCi/L
	03/18/15	7,510	pCi/L		10/13/15	14,200	pCi/L
	04/10/15	5,890	pCi/L		11/06/15	13,800	pCi/L
	05/15/15	6,350	pCi/L		12/14/15	14,000	pCi/L
	06/15/15	5,950	pCi/L	WELL AE	01/15/15	17,000	pCi/L
	07/23/15	5,550	pCi/L		02/18/15	22,200	pCi/L
	08/13/15	7,680	pCi/L		03/19/15	23,300	pCi/L
	09/10/15	11,400	pCi/L		04/15/15	20,800	pCi/L
	10/13/15	12,900	pCi/L		05/15/15	17,500	pCi/L
	11/06/15	13,300	pCi/L		06/11/15	18,300	pCi/L
	12/14/15	16,700	pCi/L		07/20/15	15,800	pCi/L
WELL AC	01/19/15	65,500	pCi/L		08/14/15	12,500	pCi/L
	02/12/15	94,900	pCi/L		09/09/15	11,300	pCi/L
	03/18/15	27,700	pCi/L		10/06/15	7,230	pCi/L
	04/17/15	71,500	pCi/L		11/06/15	6,220	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AE continued	12/09/15	6,830	pCi/L	WELL AH-D continued	11/05/15	370	pCi/L
AF	01/15/15	197	pCi/L	WELL AH-S	12/10/15	624	pCi/L
	04/15/15	223	pCi/L		01/15/15	1,100	pCi/L
	07/23/15	< 183	pCi/L		02/18/15	603	pCi/L
	10/09/15	373	pCi/L		03/17/15	663	pCi/L
WELL AG-D	01/21/15	764	pCi/L		04/15/15	986	pCi/L
	02/16/15	852	pCi/L		05/15/15	618	pCi/L
	03/19/15	861	pCi/L		06/12/15	845	pCi/L
	04/16/15	869	pCi/L		07/20/15	976	pCi/L
	05/20/15	932	pCi/L		08/12/15	1,350	pCi/L
	06/15/15	877	pCi/L		09/17/15	1,420	pCi/L
	07/15/15	935	pCi/L		10/09/15	797	pCi/L
	08/13/15	830	pCi/L		11/05/15	500	pCi/L
	09/17/15	913	pCi/L		12/10/15	477	pCi/L
	10/08/15	1,750	pCi/L	WELL AI	01/19/15	1,860	pCi/L
	11/05/15	823	pCi/L		02/12/15	2,080	pCi/L
	12/10/15	897	pCi/L		03/18/15	1,140	pCi/L
WELL AG-S	01/21/15	774	pCi/L		04/20/15	885	pCi/L
	02/16/15	948	pCi/L		05/19/15	1,490	pCi/L
	03/19/15	1,040	pCi/L		06/11/15	1,920	pCi/L
	04/16/15	1,120	pCi/L		07/21/15	1,370	pCi/L
	05/20/15	1,280	pCi/L		08/19/15	1,500	pCi/L
	06/15/15	1,210	pCi/L		09/15/15	1,550	pCi/L
	07/15/15	1,340	pCi/L		10/06/15	1,010	pCi/L
	08/13/15	1,100	pCi/L		11/09/15	1,450	pCi/L
	09/17/15	1,030	pCi/L		12/15/15	1,810	pCi/L
	10/08/15	1,000	pCi/L	WELL AJ	01/16/15	23,600	pCi/L
	11/05/15	234	pCi/L		02/13/15	25,700	pCi/L
	12/10/15	465	pCi/L		03/18/15	22,800	pCi/L
WELL AH-D	01/15/15	446	pCi/L		04/10/15	21,500	pCi/L
	02/18/15	476	pCi/L		05/15/15	25,100	pCi/L
	03/17/15	529	pCi/L		07/23/15	22,100	pCi/L
	04/15/15	461	pCi/L		08/13/15	22,100	pCi/L
	05/15/15	542	pCi/L		09/10/15	23,100	pCi/L
	06/12/15	570	pCi/L		10/13/15	26,300	pCi/L
	07/20/15	604	pCi/L		11/06/15	21,400	pCi/L
	08/12/15	612	pCi/L		12/14/15	20,500	pCi/L
	09/17/15	462	pCi/L	WELL AM	01/19/15	6,780	pCi/L
	10/09/15	534	pCi/L		02/12/15	14,200	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AM continued	03/18/15	25,200	pCi/L	WELL AR continued	09/10/15	14,400	pCi/L
	04/15/15	16,400	pCi/L		10/09/15	16,300	pCi/L
	05/18/15	8,460	pCi/L		11/11/15	10,800	pCi/L
	06/10/15	5,540	pCi/L		12/09/15	11,400	pCi/L
	07/16/15	4,800	pCi/L	WELL AS	01/15/15	2,840	pCi/L
	08/17/15	4,380	pCi/L		02/16/15	2,970	pCi/L
	09/08/15	5,340	pCi/L		03/19/15	3,490	pCi/L
	10/07/15	4,480	pCi/L		04/15/15	2,510	pCi/L
	11/12/15	11,600	pCi/L		05/20/15	2,100	pCi/L
	12/08/15	23,200	pCi/L		06/15/15	2,040	pCi/L
WELL AN	01/16/15	15,000	pCi/L		07/21/15	2,490	pCi/L
	02/13/15	17,300	pCi/L		08/12/15	2,220	pCi/L
	03/18/15	17,400	pCi/L		09/10/15	1,580	pCi/L
	04/10/15	18,100	pCi/L		10/09/15	1,390	pCi/L
	05/15/15	19,400	pCi/L		11/10/15	1,400	pCi/L
	06/15/15	< 196	pCi/L		12/09/15	2,510	pCi/L
	07/23/15	18,000	pCi/L	WELL AT	01/16/15	1,130	pCi/L
	08/13/15	16,500	pCi/L		02/13/15	1,270	pCi/L
	09/10/15	1,210	pCi/L		03/18/15	1,160	pCi/L
WELL AP	01/13/15	1,080	pCi/L		04/10/15	749	pCi/L
	02/13/15	1,180	pCi/L		05/15/15	637	pCi/L
	03/18/15	1,160	pCi/L		06/15/15	274	pCi/L
	04/14/15	1,150	pCi/L		07/23/15	1,020	pCi/L
	05/14/15	1,190	pCi/L		08/13/15	1,900	pCi/L
	06/15/15	1,060	pCi/L		09/10/15	11,100	pCi/L
	07/15/15	1,220	pCi/L		10/30/15	11,700	pCi/L
	08/14/15	3,990	pCi/L		11/06/15	11,800	pCi/L
	09/15/15	3,460	pCi/L		12/14/15	12,500	pCi/L
	10/06/15	3,080	pCi/L	WELL BW	05/19/15	1,350	pCi/L
	11/10/15	1,890	pCi/L		8/12/2015	1,250	pCi/L
	12/14/15	1,910	pCi/L		11/04/15	1,100	pCi/L
WELL AR	01/15/15	4,010	pCi/L	WELL BX	01/19/15	1,160	pCi/L
	02/19/15	4,390	pCi/L		02/11/15	1,290	pCi/L
	03/19/15	5,390	pCi/L		03/17/15	1,760	pCi/L
	04/15/15	4,490	pCi/L		04/14/15	1,550	pCi/L
	05/20/15	4,750	pCi/L		05/19/15	1,670	pCi/L
	06/12/15	5,530	pCi/L		06/11/15	1,050	pCi/L
	07/21/15	5,230	pCi/L		08/13/15	744	pCi/L
	08/12/15	3,090	pCi/L		11/04/15	572	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL BY	01/13/15	10,800	pCi/L	WELL CA continued	07/17/15	1,050	pCi/L
	02/10/15	11,900	pCi/L		08/13/15	665	pCi/L
	03/12/15	17,600	pCi/L		09/10/15	902	pCi/L
	03/19/15	18,000	pCi/L		10/08/15	1,320	pCi/L
	04/13/15	16,300	pCi/L		11/04/15	1,140	pCi/L
	04/21/15	17,400	pCi/L		12/09/15	2,050	pCi/L
	05/12/15	13,300	pCi/L	WELL DA	01/16/15	2,370	pCi/L
	05/22/15	17,700	pCi/L		02/11/15	2,660	pCi/L
	06/08/15	16,400	pCi/L		03/17/15	2,680	pCi/L
	07/13/15	17,400	pCi/L		04/17/15	2,110	pCi/L
	07/24/15	18,700	pCi/L		05/18/15	2,640	pCi/L
	08/11/15	17,900	pCi/L		06/10/15	2,520	pCi/L
	08/21/15	16,100	pCi/L		07/16/15	2,190	pCi/L
	09/08/15	17,900	pCi/L		08/12/15	2,220	pCi/L
	09/18/15	15,700	pCi/L		09/17/15	2,310	pCi/L
	10/05/15	19,100	pCi/L		10/07/15	2,150	pCi/L
	10/16/15	18,000	pCi/L		11/11/15	1,830	pCi/L
	11/02/15	19,500	pCi/L		12/07/15	2,620	pCi/L
	11/13/15	22,100	pCi/L	WELL DB	01/20/15	5,390	pCi/L
	12/07/15	25,900	pCi/L		02/12/15	5,310	pCi/L
	12/18/15	28,500	pCi/L		03/17/15	5,920	pCi/L
WELL BZ	01/13/15	383	pCi/L		04/16/15	5,910	pCi/L
	02/11/15	265	pCi/L		05/18/15	5,060	pCi/L
	03/16/15	578	pCi/L		06/10/15	5,250	pCi/L
	04/13/15	653	pCi/L		07/16/15	4,410	pCi/L
	05/13/15	429	pCi/L		08/17/15	3,820	pCi/L
	06/09/15	518	pCi/L		09/08/15	3,900	pCi/L
	07/15/15	577	pCi/L		10/07/15	3,900	pCi/L
	08/11/15	573	pCi/L		11/12/15	3,630	pCi/L
	09/14/15	564	pCi/L		12/08/15	3,610	pCi/L
	10/06/15	652	pCi/L	WELL DC	01/20/15	2,410	pCi/L
	11/03/15	653	pCi/L		02/12/15	2,870	pCi/L
	12/11/15	1,510	pCi/L		03/17/15	9,360	pCi/L
WELL CA	01/20/15	2,060	pCi/L		04/16/15	6,410	pCi/L
	02/18/15	1,950	pCi/L		05/18/15	5,680	pCi/L
	03/18/15	2,140	pCi/L		06/10/15	3,690	pCi/L
	04/21/15	2,310	pCi/L		07/16/15	1,630	pCi/L
	05/19/15	2,350	pCi/L		08/17/15	2,030	pCi/L
	06/16/15	2,120	pCi/L		09/08/15	2,330	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL DC continued	10/07/15	2,050	pCi/L	WELL DG	01/16/15	3,430	pCi/L
	11/12/15	2,010	pCi/L		02/11/15	3,310	pCi/L
	12/08/15	4,470	pCi/L		03/17/15	3,810	pCi/L
WELL DD	01/20/15	7,540	pCi/L		04/14/15	2,700	pCi/L
	02/12/15	6,720	pCi/L		05/20/15	3,000	pCi/L
	03/17/15	6,360	pCi/L		06/11/15	3,070	pCi/L
	04/16/15	6,530	pCi/L		07/16/15	3,610	pCi/L
	05/18/15	6,920	pCi/L		08/12/15	3,120	pCi/L
	06/10/15	5,920	pCi/L		09/15/15	3,010	pCi/L
	07/16/15	6,850	pCi/L		10/07/15	2,810	pCi/L
	08/17/15	6,100	pCi/L		11/11/15	2,580	pCi/L
	09/08/15	6,940	pCi/L		12/07/15	3,690	pCi/L
	10/07/15	6,370	pCi/L	WELL DH	01/20/15	6,340	pCi/L
	11/12/15	7,000	pCi/L		02/18/15	6,130	pCi/L
	12/08/15	6,600	pCi/L		03/18/15	6,530	pCi/L
WELL DE	01/20/15	12,300	pCi/L		04/21/15	5,610	pCi/L
	02/12/15	11,600	pCi/L		05/19/15	6,730	pCi/L
	03/17/15	11,000	pCi/L		06/16/15	6,080	pCi/L
	04/16/15	10,100	pCi/L		07/17/15	8,230	pCi/L
	05/18/15	10,600	pCi/L		08/13/15	6,840	pCi/L
	06/10/15	12,300	pCi/L		09/11/15	7,510	pCi/L
	07/16/15	12,500	pCi/L		10/08/15	8,900	pCi/L
	08/17/15	11,800	pCi/L		11/04/15	7,390	pCi/L
	09/08/15	14,100	pCi/L		12/09/15	10,300	pCi/L
	10/07/15	11,500	pCi/L	WELL DI	01/20/15	3,080	pCi/L
	11/12/15	11,500	pCi/L		02/18/15	3,380	pCi/L
	12/08/15	17,500	pCi/L		03/18/15	3,640	pCi/L
WELL DF	01/20/15	1,590	pCi/L		04/21/15	3,690	pCi/L
	02/12/15	1,390	pCi/L		05/19/15	4,130	pCi/L
	03/17/15	1,540	pCi/L		06/16/15	3,800	pCi/L
	04/16/15	1,730	pCi/L		07/17/15	3,640	pCi/L
	05/18/15	1,650	pCi/L		08/13/15	3,070	pCi/L
	06/10/15	1,300	pCi/L		09/11/15	2,880	pCi/L
	07/16/15	1,260	pCi/L		10/08/15	3,280	pCi/L
	08/17/15	1,380	pCi/L		11/04/15	3,020	pCi/L
	09/08/15	1,130	pCi/L		12/09/15	3,450	pCi/L
	10/07/15	1,220	pCi/L	WELL DJ	01/20/15	902	pCi/L
	11/12/15	1,310	pCi/L		02/18/15	1,060	pCi/L
	12/08/15	1,840	pCi/L		03/18/15	1,240	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL DJ continued	04/21/15	1,200	pCi/L	WELL O continued	03/19/15	65,100	pCi/L
	05/19/15	1,330	pCi/L		04/15/15	29,100	pCi/L
	06/16/15	1,160	pCi/L		05/15/15	26,400	pCi/L
	07/17/15	1,210	pCi/L		06/11/15	19,900	pCi/L
	08/13/15	1,040	pCi/L		07/20/15	8,730	pCi/L
	09/11/15	1,020	pCi/L		08/14/15	8,430	pCi/L
	10/08/15	1,420	pCi/L		09/09/15	6,500	pCi/L
	11/04/15	934	pCi/L		10/06/15	10,100	pCi/L
	12/09/15	960	pCi/L		11/06/15	6,030	pCi/L
WELL K	01/14/15	< 191	pCi/L	WELL P	12/09/15	19,700	pCi/L
	07/14/15	< 193	pCi/L		01/14/15	< 192	pCi/L
L	01/16/15	< 195	pCi/L	WELL Q	07/15/15	< 191	pCi/L
	07/23/15	< 182	pCi/L		01/19/15	< 159	pCi/L
WELL M	01/21/15	4,110	pCi/L	WELL R	07/16/15	< 195	pCi/L
	02/18/15	4,430	pCi/L		01/21/15	2,880	pCi/L
	03/17/15	5,780	pCi/L		02/18/15	3,380	pCi/L
	04/17/15	7,400	pCi/L		03/17/15	3,390	pCi/L
	05/19/15	6,740	pCi/L		04/17/15	3,720	pCi/L
	06/12/15	7,790	pCi/L		05/19/15	3,140	pCi/L
	07/21/15	6,920	pCi/L		06/12/15	3,520	pCi/L
	08/19/15	5,080	pCi/L		07/21/15	2,910	pCi/L
	09/09/15	4,880	pCi/L		08/19/15	2,950	pCi/L
	10/06/15	4,260	pCi/L		09/09/15	3,240	pCi/L
	11/09/15	7,920	pCi/L		10/06/15	2,640	pCi/L
	12/09/15	12,800	pCi/L		11/09/15	3,070	pCi/L
WELL N	01/19/15	6,980	pCi/L	WELL S	12/09/15	3,190	pCi/L
	02/12/15	6,570	pCi/L		01/16/15	17,300	pCi/L
	03/18/15	7,940	pCi/L		02/13/15	15,500	pCi/L
	04/15/15	7,700	pCi/L		03/18/15	15,300	pCi/L
	05/18/15	9,050	pCi/L		04/10/15	14,300	pCi/L
	06/10/15	8,880	pCi/L		05/15/15	14,400	pCi/L
	07/16/15	9,800	pCi/L		07/23/15	10,800	pCi/L
	08/17/15	9,030	pCi/L		08/21/15	11,400	pCi/L
	09/08/15	11,400	pCi/L		09/10/15	1,620	pCi/L
	10/07/15	9,010	pCi/L		10/13/15	14,600	pCi/L
	11/12/15	11,900	pCi/L		11/06/15	11,900	pCi/L
	12/08/15	9,160	pCi/L		12/14/15	8,360	pCi/L
WELL O	01/15/15	58,300	pCi/L	WELL S-V	01/16/15	17,300	pCi/L
	02/18/15	54,800	pCi/L		02/13/15	15,500	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL S-V continued	03/19/15	7,280	pCi/L	WELL W	01/14/15	1,410	pCi/L
	04/15/15	6,600	pCi/L		02/19/15	1,830	pCi/L
	05/20/15	6,830	pCi/L		03/17/15	1,480	pCi/L
	06/12/15	6,960	pCi/L		04/20/15	1,550	pCi/L
	07/17/15	7,290	pCi/L		05/19/15	1,230	pCi/L
	08/14/15	6,870	pCi/L		06/11/15	1,580	pCi/L
	09/09/15	2,130	pCi/L		07/21/15	1,560	pCi/L
	10/13/15	962	pCi/L		08/20/15	1,690	pCi/L
	11/11/15	743	pCi/L		09/15/15	1,910	pCi/L
	12/07/15	1,100	pCi/L		10/08/15	3,770	pCi/L
WELL V	01/14/15	216	pCi/L		11/09/15	3,930	pCi/L
	04/14/15	< 175	pCi/L		12/15/15	4,970	pCi/L
	07/21/15	< 197	pCi/L				

Notes:

pCi/L

Picocuries per liter

*

AC-MT samples are collected from a mobile water tank during purge activities associated with well AC.

<

Tritium was not detected above the indicated laboratory lower limit of detection (LLD).

216

Bold values indicate tritium was detected.

58,300

Bold and shaded values indicate tritium was detected above its New Jersey Groundwater Quality Criteria (20,000 pCi/L).

161

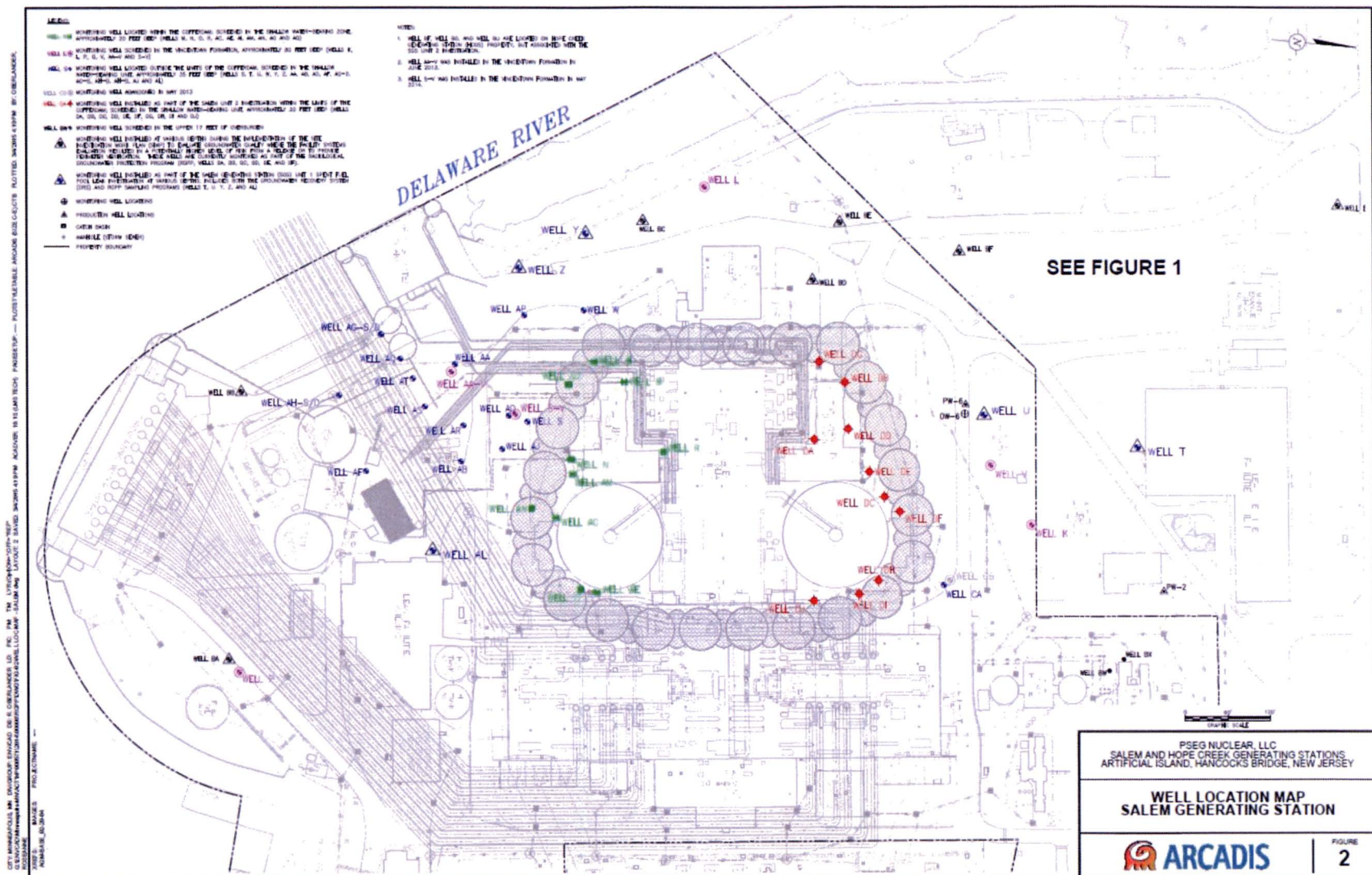


Figure 2. Well Location Map, Salem Generating StationPage Intentionally Left Blank