PSE&G

The Energy People

HOPE CREEK GENERATING STATION
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
HCGS RERR-5

1988

DOCKET NO. 50-354
OPERATING LICENSE NO. NPF-57

SEPTEMBER 1988

HOPE CREEK GENERATING STATION
SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT
HCGS RERR-5

DOCKET NO. 50-354
OPERATING LICENSE NO. NPF-57

SEPTEMBER 1988

NPF-57

REPORT NO. HCGS-RERR-5

RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY 1 - JUNE 30, 1988

HOPE CREEK GENERATING STATION

Public Service Electric and Gas Company

HOPE CREEK GENERATING STATION
RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY - JUNE 1988

INTRODUCTION

This report, HCGS-RERR-5, summarizes the releases of radioactive materials in liquid, gaseous and solid form from the Hope Creek Generating Station (HCGS) for the period January 1, 1988 to June 30, 1988.

The report is prepared in the format of Regulatory Guide 1.21, Appendix B, as required by Specification 6.9.1.7 of the Hope Creek Technical Specifications. Preceding the tables summarizing the gaseous and liquid discharges and solid waste shipments are our responses to parts A-F of the "Supplemental Information" section of Regulatory Guide 1.21, Appendix B.

As required by Regulatory Guide 1.21, our Technical Specification limits are described in detail within this report along with a summary description of how measurements and approximations of the total activity discharged were developed.

HCGS generated 2,840,408 megawatt-hours of electrical energy (net) during the reporting period.

The gross alpha, Sr-89, Sr-90, and Fe-55 analyses for the second half of 1987 (refer to RERR-4) have been completed, amended pages to RERR-4 are included in this report.

Part A. PRELIMINARY SUPPLEMENTAL INFORMATION

1.0 REGULATORY LIMITS

1.1 Noble Gases Release Limits

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

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

In addition, the air dose due to noble gases released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to the following:

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

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

1.2 Iodine, Particulates, and Tritium

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

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

In addition, the dose to a member of the public from iodine-131, from tritium, and from all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from the site to areas at and beyond the site boundary shall be limited to the following:

During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

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

1.3 Liquid Effluents Release Limits

The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in 10CFR, Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 microcuries per milliliter.

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

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

During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

1.4 Total Dose Limit

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

2.0 MAXIMUM PERMISSIBLE CONCENTRATIONS (MPC)

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

a. MPC values were not used to determine the maximum release rates for fission gases, iodines, or particulates.

b. MPC values as stated in 10CFR20, Appendix B, Table II, Column 2 were used for liquids.

c. MPC value used for dissolved or entrained noble gases was 2E-4 microcuries per milliliter.

3.0 AVERAGE ENERGY

Regulatory Guide 1.21 requires that the licensee provide the average energy of the radionuclide mixture in releases of fission and activation gases, if applicable.

Release limits for the HCGS are not based upon average energy, hence, this section does not apply.

4.0 MEASUREMENTS AND APPROXIMATION OF TOTAL RADIOACTIVITY

4.1 Liquid effluents are monitored in accordance with Table 4.11.1.1.1-1 of the Technical Specifications. During the period of record, all liquid wastes were routed to the sampling tanks for monitoring prior to release. Technical Specifications require these tanks to be thoroughly mixed before sampling and analysis before any releases are made. Batch releases are defined as releases from equipment drain sample tanks, floor drain sample tanks, detergent drain tanks, and condensate storage tanks. There are no continuous liquid releases for this reporting period. The preponderant gamma emitting isotopes detected in sampling were Cr-51, Na-24, and Zn-65. Specific activity from analyses were multiplied by the volume of effluent discharged to the environment in order to estimate the total liquid activity discharged.

The detection requirements of Table 4.11.1.1.1.-1 of the Technicial Specifications are achieved or exceeded. Isotopes existing at concentrations below the achieved detection limit are treated as not being present.

4.2 Gaseous effluent streams are monitored and sampled in accordance with Table 4.11.2.1.2-1 of the Technical Specifications. The north plant vent (NPV) and south plant vent (SPV) are the final release points for most planned gaseous effluent releases. A small quantity of gaseous effluent will be released via the Filtration, Recirculation, and Ventilation System (FRVS) vent during testing periods. The NPV and SPV are continuously monitored for particulates, iodines, and noble gases; the FRVS is continuously monitored for noble gases. The NPV and SPV have moving particulate and fixed iodine filters; the FRVS has fixed particulate and iodine filters. The filters are changed and analyzed at least weekly when releases are in progress. The NPV and SPV are sampled monthly for noble gases and tritium.

The detection requirements of Tables 4.11.2.1.2-1 of the Technical Specifications are achieved or exceeded. Isotopes existing at concentrations below the achieved detection limit are treated as not being present.

Continuous Mode gaseous releases are quantified by routine (monthly) sampling and isotopic analyses of the plant vents. Specific activities for each isotope detected during the routine sampling are adjusted using the radiation monitoring readings to obtain an average concentration for the period. This average concentration is then multiplied by the total vent flow volume for the entire sampling period in order to estimate the normal continuous release of radioactivity through the plant vent.

When monthly noble gas grab samples yielded no detectable activity, continuous mode releases were quantified by integrating Radiation Monitoring System readings above background. Noble Gas Isotopic abundances for these integrations were based on the ANSI mix for BWR's. Doses calculated from this data employed the methods of the Hope Creek ODCM Section 2.0.

Batch Mode gaseous releases (primary containment purge) are quantified by pre-release sampling and isotopic analyses. Specific activities for each isotope are multiplied by the total purge flow volume in order to estimate the batch release of radioactivity through the plant vent.

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

The estimated total error of the reported continuous gaseous releases is within 25% when concentrations exceed detectable levels. This error is due primarily to variability of waste stream flow rates and changes in isotopic distributions of waste streams between sampling periods. The estimated total error of the reported batch gaseous releases is within 25%.

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

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

5.0 BATCH RELEASES

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

6.0 UNPLANNED RELEASES

During this reporting period there were no unplanned releases.

7.0 MODIFICATION TO PREVIOUS RADIOACTIVE EFFLUENT RELEASE REPORTS

Our last report (RERR-4) did not include the quarterly gross alpha, Sr-89, Sr-90, and Fe-55 composite data for the fourth quarter of 1987. Amended pages to RERR-4 are included at the end of this report.

Part B. GASEOUS EFFLUENTS

See Summary Tables 1A thru 1C.

Part C. LIQUID EFFLUENTS

See Summary Tables 2A and 2B.

Part D. SOLID WASTE

See Summary Table 3.

Part E. RADIOLOGICAL IMPACT ON MAN

The calculated individual doses in this section are based on actual locations of nearby residents and farms. The population dose impact is based on historical site specific data i.e., food production, milk production, feed for milch animals, and seafood production.

The doses were calculated using methods described in Regulatory Guide 1.109. Individual doses from batch and continuous releases were calculated using the annual average historic meteorological dispersion coefficients as described in the Offsite Dose Calculation Manual. Population doses were calculated using the meteorological dispersion coefficients for the six month interval from January through June, 1988.

Liquid Pathways

Doses to individuals in the population from liquid releases are primarily from the seafood ingestion pathway. The total body dose to an individual was calculated to be 4.1E-01 mrem. The calculated highest organ dose from liquid releases was 9.30E-01 mrem to the liver. The calculated population total body dose was 4.72E+00 person-rem. The calculated average total body dose to the population within fifty miles of the site was 8.74E-04 mrem/person.

Air Pathways

The resulting total body and skin doses to an individual were calculated to be 2.04E-04 mrem and 1.72E-02 mrem respectively. The highest organ dose due to radioiodines and particulates with half-lives greater than 8 days was 3.55E-03 mrem to the thyroid. The calculated population total body dose was 9.62E-02 person-rem. The calculated average total body dose to the population within fifty miles of the site was 1.78E-05 mrem/person.

Direct Radiation

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

TLD's at onsite locations 2S-2 and 5S-1, which are 0.3 miles and 0.9 miles from the point of origin, averaged 4.95 and 4.35 mrads/month respectively. The values for stations 2S-2 and 5S-1 are within the statistical variation associated with the preoperational program results.

It should be noted that the nearest resident is 3.5 miles away. It can thus be concluded that there was no measurable dose to any offsite location from direct radiation.

Part F. METEOROLOGICAL DATA

Cumulative joint wind frequency distributions by atmospheric stability class at the 300 foot elevation are provided for the first and second quarters of 1988 as Tables 5 and 6.

Part G. ODCM CHANGES

The Hope Creek Offsite Dose Calculation Manual was revised on June 8, 1988. In accordance with the Hope Creek Technical Specification 6.9.1.7 the revised ODCM and an explanation of the revisions is attached.

Part H. MONITOR INOPERABILITY

The filtration, recirculation and ventilation system (FRVS) monitor, the North Plant Vent (NPV) monitor and the South Plant Vent (SPV) monitor have been inoperable during December 1987 to June 20, 1988. This inoperability exceeded the 30 day time period for returning the instruments to OPERABLE status.

The instruments were out of service due to a lack of procedures for performing Technical Specification Surveillance requirements. Once the procedures were established problems were noted with the monitors sampling system designs. Design changes were required and installed which required waiting for parts and calibrating air flow meters. The monitors were declared operable on June 20, 1988.

HOPE CREEK GENERATING STATION
TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Units	1st Quarter	2nd Quarter	Est.Total Error %
A. Fission & Activation Gases				
1. Total release	Ci	0.00E+00	5.76E+02	
2. Average release rate for period	uCi/sec.	0.00E+00	2.31E+01	
3. Percent of technical specification limit (T.S. 3.11.2.2(a))	%	0.00E+00	2.30E-03	
B. Iodines				
1. Total iodine-131, iodine-133		0.00E+00	5.82E-04	
2. Average release rate for period	uCi/sec.	0.00E+00	4.77E-06	
3. Percent of technical specification limit (1) (T.S. 3.11.2.3(a))	%	0.00E+00	2.37E-04	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	0.00E+00	8.10E-03	
2. Average release rate for period	uCi/sec.	0.00E+00	3.99E-04	
3. Percent of technical specification limit (1) (T.S. 3.11.2.3(a))	%		2.37E-04	
4. Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	
D. Tritium				
1. Total release	Ci	0.00E+00	1.65E-01	
2. Average release rate for period	uCi/sec.	0.00E+00	6.63E-03	
3. Percent of technical specification limit (1) (T.S. 3.11.2.3(a))	%	0.00E+00	2.37E-04	

(1) Iodine, tritium, and particulates are treated as a group.

HOPE CREEK GENERATING STATION
TABLE 1B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Units	1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
1. Fission gases					
Krypton-85	Ci		5.76E+02		
Total for period	Ci		5.76E+02		
2. Iodines					
Iodine-131	Ci		1.19E-04		
Iodine-133	Ci		4.63E-04		
Total for period	Ci		5.82E-04		
3. Particulates (Half life >8 days)					
Sodium-24	Ci				
Chromium-51	Ci		2.66E-03		
Manganese-54	Ci		1.86E-03		
Cobalt-58	Ci		7.09E-04		
Cobalt-60	Ci		2.87E-03		
Iron-59	Ci				
Yttrium-88	Ci				
Strontium-89	Ci				
Strontium-90	Ci				
Zirconium-95	Ci				
Molybdenum-99	Ci				
Cesium-137	Ci				
Cerium-139	Ci				
Total For Period	Ci		8.10E-03		
4. Tritium					
Tritium	Ci		1.65E-01		

HOPE CREEK GENERATING STATION
TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
GASEOUS EFFLUENTS-ELEVATED RELEASES

There were no elevated releases during this reporting period.

HOPE CREEK GENERATING STATION
TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	Units	1st Quarter	2nd Quarter	Est. Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	2.28E-01	3.56E-01	25%
2. Average diluted concentration during period	uCi/ml	1.33E-07	1.90E-07	
3. Percent of applicable limit (T.S. 3.11.1.2.(a))	%	1.76E+01	1.30E+01	
B. Tritium				
1. Total release	Ci	2.92E+00	3.16E+00	25%
2. Average diluted concentration during period	uCi/ml	1.69E-06	1.68E-06	
3. Percent of applicable limit (T.S. 3.11.1.1)	%	5.63E-02	5.50E-02	
C. Dissolved and entrained noble gases				
1. Total release	Ci	4.99E-03	1.69E-02	25%
2. Average diluted concentration during period	uCi/ml	2.86E-09	8.97E-09	
3. Percent of applicable limit (T.S. 3.11.1.1)	%	1.43E-03	4.48E-03	
D. Gross alpha radioactivity				
1. Total release	Ci	0.00E+00	0.00E+00	
E. Volume of waste release (prior to dilution - Batch Release)	liters	1.44E+07	1.38E+08	25%
F. Volume of dilution water used during entire period	liters	1.72E+09	1.87E+09	25%

HOPE CREEK GENERATING STATION
TABLE 2B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
Antimony-122	Ci			3.58E-06	4.96E-06
Antimony-124	Ci				
Antimony-125	Ci				
Barium-139	Ci			8.22E-05	
Cerium-141	Ci			5.82E-06	6.29E-06
Cerium-143	Ci			3.55E-06	
Cerium-144	Ci				
Cobalt-58	Ci			3.54E-03	2.63E-03
Cobalt-60	Ci			5.20E-03	5.81E-03
Chromium-51	Ci			2.69E-02	1.67E-02
Cesium-137	Ci				1.43E-06
Copper-64	Ci				8.93E-04
Iron-55	Ci			3.31E-02	1.93E-01
Iron-59	Ci			4.55E-03	4.87E-03
Iodine-131	Ci			5.39E-06	1.65E-05
Iodine-133	Ci			9.21E-05	2.56E-04
Manganese-54	Ci			1.09E-02	1.26E-02
Manganese-56	Ci				
Mercury-203	Ci			2.93E-06	2.04E-06
Molybdenum-99	Ci			1.67E-04	
Nickel-65	Ci				
Niobium-95	Ci			1.09E-05	2.38E-05
Niobium-97	Ci			2.62E-05	3.72E-05
Ruthenium-103	Ci			7.13E-06	8.19E-06
Praseodymium-144	Ci			1.37E-05	5.76E-03
Selenium-75	Ci				
Sodium-24	Ci			5.16E-02	5.50E-02
Strontium-89	Ci				
Strontium-92	Ci				
Technetium-99m	Ci			3.25E-04	4.91E-04
Technetium-101	Ci			6.46E-05	2.98E-05
Technetium-106	Ci			1.00E-04	
Tellurium-132	Ci			7.66E-07	2.42E-06
Yttrium-91	Ci				6.95E-06
Yttrium-91m	Ci			2.07E-04	1.03E-03
Zinc-65	Ci			9.02E-02	5.48E-02
Zinc-69	Ci			3.59E-05	3.69E-05
Zirconium-97	Ci			1.45E-04	1.02E-04
Unidentified	Ci			4.54E-03	1.81E-03
Total (Above)	Ci			2.28E-01	3.56E-01

HOPE CREEK GENERATING STATION
TABLE 2B
(CONTINUED)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
Tritium	Ci			2.91E+00	3.15E+00
Xenon-131m	Ci			2.14E-04	4.11E-05
Xenon-133	Ci			8.23E-04	1.00E-03
Xenon-133m	Ci			1.21E-05	2.68E-05
Xenon-135	Ci			2.59E-03	4.58E-03
Xenon-135m	Ci				1.20E-05
Krypton-85	Ci			3.43E-04	9.73E-03
Krypton-85m	Ci			1.14E-06	
Krypton-87	Ci			1.68E-05	1.86E-05
Argon-41	Ci			9.82E-04	1.49E-03

HOPE CREEK GENERATING STATION
TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of Waste	Units	6-month Period	Est. Total Error, %
a. Spent resins, filters sludges, evaporator bottoms	m3 Ci	170.4 2.59E+03	25
b. Dry compressible waste, contaminated equipment	m3 Ci	0.00E+00	
c. Irradiated components, control rods	m3 Ci	0.00E+00	
d. Others (Describe) Solidified Oil	m3 Ci	0.00E+00	

2. Estimate of major nuclide composition (For Type A and B waste)

	(Percent)	Resin (Ci)	DAW (Ci)	Solidified Oil (Ci)
Chromium-51	3.2 %	8.27E+01		
Manganese-54	4.0 %	1.04E+02		
Iron-55	8.1 %	2.10E+02		
Iron-59	2.0 %	5.04E+01		
Cobalt-58	1.3 %	3.32E+01		
Cobalt-60	2.4 %	6.14E+01		
Nickel-59	%			
Nickel-63	%			
Zinc-65	78.8 %	2.04E+03		
Tritium-3	0.05 %	1.35E+00		
Carbon-14	0.0 %	1.33E-03		
Technetium-99	%			
Cesium-137	0.2 %	5.36E+00		
I-129, Pu-238, 239, 240, Am-241, Cm-242, 243 and 244	0.0 %	1.40E-02		

HOPE CREEK GENERATING STATION
TABLE 3
(CONTINUED)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
16	Truck	Barnwell, South Carolina
3	Truck	Richland, Washington

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
0		

HOPE CREEK GENERATING STATION
TABLE 4A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates: January 1, 1988 - March 31, 1988

2. Type of release: Gas

3. Number of releases during the 1st Quarter: 1

4. Total time duration for all releases of type listed above: 3959

5. Maximum duration for releases of type listed above: 3959 minutes

6. Average duration for all releases of type listed above: 3959 minutes

7. Minimum duration for release of type listed above: 3959 minutes

8. The average stream flow (dilution flow) during the period of release: N/A

HOPE CREEK GENERATING STATION
TABLE 4A
(CONTINUED)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates: April 1, 1988 - June 30, 1988

2. Type of release: Gas

3. Number of releases during the 2nd Quarter: 1

4. Total time duration for all releases of type listed above:
   15118 minutes

5. Maximum duration for releases of type listed above:
   15118 minutes

6. Average duration for all releases of type listed above:
   15118 minutes

7. Minimum duration for release of type listed above:
   15118 minutes

8. The average stream flow (dilution flow) during the period
   of release: N/A

HOPE CREEK GENERATING STATION
TABLE 4B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates: January 1, 1988 - March 31, 1988

2. Type of release: Liquid

3. Number of releases during the 1st Quarter: 310

4. Total time duration for all releases of type listed above: 56647 minutes

5. Maximum duration for releases of type listed above: 695 minutes

6. Average duration for all releases of type listed above: 183 minutes

7. Minimum duration for release of type listed above: 26 minutes

8. The average stream flow (dilution flow) during the period of release: 8.02E+03 gpm

HOPE CREEK GENERATING STATION
TABLE 4B
(CONTINUED)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JANUARY 1 - JUNE 30, 1988
SUMMARY SHEET FOR RADIOACTIVE EFFLUENTS RELEASED
IN A BATCH MODE

BATCH RELEASES ONLY

1. Dates: April 1, 1988 - June 30, 1988

2. Type of release: Liquid

3. Number of releases during the 2nd Quarter: 290

4. Total time duration for all releases of type listed above: 55800 minutes

5. Maximum duration for releases of type listed above: 1135 minutes

6. Average duration for all releases of type listed above: 192 minutes

7. Minimum duration for release of type listed above: 44 minutes

8. The average stream flow (dilution flow) during the period of release: 8.85E+03 gpm

ARTIFICIAL ISLAND 1/58- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 3COFT

DEG C/100M (300-33FT) LAPSE RATE LE-1.9 CLASS A

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.	0	0.0	0	0.0	1	0.0	1	0.0	2	0.1
SSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
S	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SW	0	0.0	0	0.0	0	0.0	0	0.0	0	[illegible]	0	0.0	0	0.0
WSW	0	0.0	0	0.0	0	0.0	0	0.0	0	[illegible]	0	0.0	0	0.0
W	0	0.0	0	0.0	0	0.0	0	0.0	0	[illegible]	0	0.0	0	0.0
WNW	0	0.0	0	0.0	0	0.0	1	0.0	2	[illegible]	0	0.0	3	0.1
NW	0	0.0	0	0.0	0	0.0	1	0.0	5	[illegible]	1	0.0	7	0.3
NNW	0	0.0	0	0.0	0	0.0	2	0.1	4	0.2	0	0.0	6	0.3
	0	0.0	0	0.0	0	0.0	4	0.2	12	0.6	2	0.1	18	0.9

MEAN WIND SPEED 21.4
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEL C/100M (300-33FT) LAPSE RATE -1.8/ -1.7 CLASS B

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1	2	0.1
SSE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0
S	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSW	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
SW	0	0.0	1	0.0	0	0.0	1	0.0	0	0.0	0	0.0	2	0.1
WSW	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
W	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0	0	0.0	4	0.2
WNW	0	0.0	0	0.0	5	0.2	8	0.4	6	0.3	2	0.1	21	1.0
NW	0	0.0	0	0.0	0	0.0	7	0.3	6	0.3	3	0.1	16	0.7
NNW	0	0.0	0	0.0	0	0.0	4	0.2	1	0.0	1	0.0	6	0.3
	0	0.0	1	0.0	11	0.5	24	1.1	13	0.6	8	0.4	57	2.6

MEAN WIND SPEED 17.4
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE -1.6/ -1.5 CLASS C

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	3	0.1
NNE	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	4	0.2	0	0.0	0	0.0	0	0.0	4	0.2
E	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
SSE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0
S	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
SSW	0	0.0	2	0.1	1	0.0	0	0.0	0	0.0	0	0.0	3	0.1
SW	0	0.0	3	0.1	1	0.0	0	0.0	0	0.0	0	0.0	4	0.2
WSW	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	0	0.0	3	0.1
W	0	0.0	0	0.0	3	0.1	6	0.3	2	0.1	4	0.2	15	0.7
WNW	0	0.0	0	0.0	3	0.1	13	0.6	5	0.2	3	0.1	24	1.1
NW	0	0.0	0	0.0	6	0.3	11	0.5	5	0.2	2	0.1	24	1.1
NNW	0	0.0	1	0.0	8	0.4	9	0.4	1	0.0	0	0.0	19	0.9
	0	0.0	8	0.4	33	1.5	42	1.9	13	0.6	9	0.4	105	4.8

MEAN WIND SPEED 14.7
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIPUTION OF WIND DIRECTION AND SPEED LOCATION 500FT DEG C/100M (300-33FT) LAPSE RATE -1.4/ -0.5 CLASS D

SPEEDS(MI/HR)

DIRECTION	.6-3.5 SUM	.6-3.5 PERCENT	3.6-7.5 SUM	3.6-7.5 PERCENT	7.6-12.5 SUM	7.6-12.5 PERCENT	12.6-18.5 SUM	12.6-18.5 PERCENT	18.6-24.5 SUM	18.6-24.5 PERCENT	>=24.6 SUM	>=24.6 PERCENT	SUM	PERCENT
N	1	0.0	3	0.1	6	0.3	10	0.5	11	0.5	3	0.1	34	1.6
NNE	1	0.0	5	0.2	11	0.5	11	0.5	10	0.5	0	0.0	38	1.7
NE	0	0.0	9	0.4	5	0.2	5	0.2	3	0.1	0	0.0	22	1.0
ENE	1	0.0	6	0.3	4	0.2	3	0.1	2	0.1	2	0.1	18	0.8
E	1	0.0	5	0.2	9	0.4	4	0.2	0	0.0	0	0.0	19	0.9
ESE	1	0.0	2	0.1	1	0.0	8	0.4	2	0.1	0	0.0	14	0.6
SE	0	0.0	2	0.1	7	0.3	10	0.5	9	0.4	8	0.4	36	1.7
SSE	1	0.0	11	0.5	5	0.2	14	0.6	12	0.6	0	0.0	43	2.0
S	2	0.1	4	0.2	3	0.1	9	0.4	6	0.3	1	0.0	25	1.1
SSW	1	0.0	5	0.2	5	0.2	7	0.3	11	0.5	2	0.1	31	1.4
SW	0	0.0	3	0.1	4	0.2	3	0.1	3	0.1	1	0.0	14	0.6
WSW	1	0.0	5	0.2	7	0.3	3	0.1	1	0.0	1	0.0	18	0.8
W	0	0.0	9	0.4	13	0.6	47	2.2	27	1.2	19	0.9	115	5.3
WNW	0	0.0	5	0.2	23	1.1	60	2.8	66	3.0	24	1.1	178	8.2
NW	0	0.0	2	0.1	26	1.2	40	1.8	50	2.3	26	1.2	144	6.6
NNW	1	0.0	6	0.3	15	0.7	21	1.0	8	0.4	8	0.4	59	2.7
	11	0.5	82	3.8	144	6.6	255	11.7	221	10.1	95	4.4	808	37.1

MEAN WIND SPEED	16.6
CALM HOURS	0
PERCENT CALM	0.0
MISSING	0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE -0.47 1.5 CLASS E

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	3	0.1	3	0.1	11	0.5	14	0.6	8	0.4	1	0.0	40	1.9
NNE	0	0.0	2	0.1	11	0.5	10	0.5	1	0.0	0	0.0	24	1.1
NE	0	0.0	7	0.3	7	0.3	11	0.5	1	0.0	2	0.1	28	1.3
ENE	1	0.0	3	0.1	4	0.2	5	0.2	3	0.1	1	0.0	17	0.8
E	1	0.0	1	0.0	6	0.3	4	0.2	4	0.2	0	0.0	16	0.7
ESE	1	0.0	4	0.2	5	0.2	4	0.2	2	0.1	0	0.0	16	0.7
SE	1	0.0	7	0.3	6	0.3	14	0.6	12	0.6	10	0.5	50	2.3
SSE	3	0.1	2	0.1	12	0.6	15	0.7	15	0.7	2	0.1	49	2.2
S	0	0.0	4	0.2	17	0.8	22	1.0	15	0.7	10	0.5	68	3.1
SSW	1	0.0	7	0.3	17	0.8	27	1.2	24	1.1	16	0.7	92	4.2
SW	0	0.0	9	0.4	22	1.0	23	1.1	10	0.5	6	0.3	70	3.2
WSW	1	0.0	7	0.3	10	0.5	16	0.7	1	0.0	0	0.0	35	1.6
W	1	0.0	12	0.6	11	0.5	20	0.9	6	0.3	0	0.0	50	2.3
WNW	2	0.1	13	0.6	16	0.7	30	1.4	4	0.2	5	0.2	70	3.2
NW	1	0.0	5	0.2	27	1.2	59	2.7	21	1.0	13	0.6	126	5.8
NNW	2	0.1	8	0.4	12	0.6	32	1.5	15	0.7	5	0.2	74	3.4
	18	0.8	94	4.3	196	8.9	306	14.0	142	6.5	71	3.3	825	37.8

MEAN WIND SPEED 15.0
CALM HOURS 0
PERCENT CALM 0.0
MISSING 9

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED LOCATION 300FT DEG C/100M (300-33FT) LAPSE RATE 1.6 / 4.0 CLASS F

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	1	0.0	5	0.2	1	0.0	7	0.3	0	0.0	0	0.0	14	0.6
NNE	1	0.0	4	0.2	2	0.1	2	0.1	0	0.0	0	0.0	9	0.4
NE	1	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	3	0.1
ENE	1	0.0	2	0.1	6	0.3	3	0.1	0	0.0	0	0.0	12	0.6
E	0	0.0	3	0.1	1	0.0	1	0.0	0	0.0	0	0.0	5	0.2
ESE	0	0.0	2	0.1	3	0.1	3	0.1	0	0.0	0	0.0	8	0.4
SE	2	0.1	4	0.2	6	0.3	9	0.4	0	0.0	2	0.1	23	1.1
SSE	0	0.0	3	0.1	6	0.3	8	0.4	6	0.3	2	0.1	25	1.1
S	2	0.1	0	0.0	6	0.3	13	0.6	25	1.1	5	0.2	51	2.3
SSW	0	0.0	3	0.1	5	0.2	11	0.5	23	1.1	12	0.6	54	2.5
SW	1	0.0	3	0.1	5	0.2	15	0.7	11	0.5	2	0.1	37	1.7
WSW	0	0.0	0	0.0	10	0.5	2	0.1	0	0.0	0	0.0	12	0.6
W	0	0.0	3	0.1	3	0.1	0	0.0	0	0.0	0	0.0	6	0.3
WNW	0	0.0	0	0.0	1	0.0	5	0.2	0	0.0	0	0.0	6	0.3
NW	0	0.0	0	0.0	3	0.1	12	0.6	3	0.1	0	0.0	18	0.8
NNW	0	0.0	2	0.1	8	0.4	3	0.1	1	0.0	0	0.0	14	0.6
	9	0.4	34	1.6	66	3.0	95	4.4	70	3.2	23	1.1	297	13.6

MEAN WIND SPEED 15.1
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED LOCATION 300FT DEG C/100M (300-33FT) LAPSE RATE GT. 4.0 CLASS G

SPEEDS(MI/HR)

	.6-3.5		3.5-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
NNE	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	3	0.1
SE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	0	0.0	6	0.3	1	0.0	5	0.2	12	0.6
S	0	0.0	0	0.0	2	0.1	6	0.3	11	0.5	3	0.1	22	1.0
SSW	1	0.0	0	0.0	5	0.2	5	0.2	12	0.6	0	0.0	23	1.1
SW	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0
WSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
W	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
WNW	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.1
NW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0
NNW	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1
	1	0.0	4	0.2	11	0.5	21	1.0	24	1.1	9	0.4	70	3.2

MEAN WIND SPEED 17.5
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 1/88- 3/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE
ALL STABILITIES

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	5	0.2	11	0.5	21	1.0	33	1.5	19	0.9	4	0.2	93	4.3
NNE	2	0.1	11	0.5	26	1.2	23	1.1	11	0.5	0	0.0	73	3.3
NE	1	0.0	16	0.7	12	0.6	17	0.8	5	0.2	2	0.1	53	2.4
ENE	3	0.1	11	0.5	18	0.8	11	0.5	5	0.2	3	0.1	51	2.3
E	2	0.1	9	0.4	18	0.8	9	0.4	4	0.2	0	0.0	42	1.9
ESE	2	0.1	3	0.4	9	0.4	18	0.8	4	0.2	0	0.0	41	1.9
SE	3	0.1	13	0.6	21	1.0	33	1.5	22	1.0	23	1.1	115	5.3
SSE	4	0.2	16	0.7	23	1.1	45	2.1	34	1.6	9	0.4	131	6.0
S	4	0.2	9	0.4	28	1.3	50	2.3	57	2.6	19	0.9	167	7.7
SSW	3	0.1	17	0.8	35	1.6	50	2.3	70	3.2	30	1.4	205	9.4
SW	1	0.0	19	0.9	32	1.5	43	2.0	24	1.1	9	0.4	128	5.9
WSW	2	0.1	13	0.6	31	1.4	21	1.0	2	0.1	1	0.0	70	3.2
W	1	0.0	25	1.1	31	1.4	76	3.5	35	1.6	23	1.1	191	8.9
WNW	2	0.1	19	0.9	49	2.2	117	5.4	83	3.8	34	1.6	304	13.9
NW	1	0.0	7	0.3	62	2.8	130	6.0	90	4.1	46	2.1	336	15.4
NNW	3	0.1	19	0.9	43	2.0	71	3.3	30	1.4	14	0.6	180	8.3
	39	1.8	223	10.2	459	21.1	747	34.3	495	22.7	217	10.0	2190	100.0

MISSING HOURS 4

MEAN WIND SPEED 15.8
TOTAL NUMBER OF CALM HOURS 0 PERCENT 0.0

ARTIFICIAL ISLAND 1/88- 3/88

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M
(300-33FT)

DIRECTION VS SPEED

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.4-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	5	0.2	11	0.5	21	1.0	33	1.5	19	0.9	4	0.2	93	4.3
NNE	2	0.1	11	0.5	26	1.2	23	1.1	11	0.5	0	0.0	73	3.3
NE	1	0.0	16	0.7	12	0.5	17	0.8	5	0.2	2	0.1	53	2.4
ENE	3	0.1	11	0.5	19	0.8	11	0.5	5	0.2	3	0.1	51	2.3
E	2	0.1	9	0.4	18	0.8	9	0.4	4	0.2	0	0.0	42	1.9
ESE	2	0.1	8	0.4	9	0.4	18	0.8	4	0.2	0	0.0	41	1.9
SE	3	0.1	13	0.6	21	1.0	33	1.5	22	1.0	23	1.1	115	5.3
SSE	4	0.2	16	0.7	23	1.1	45	2.1	34	1.6	9	0.4	131	6.0
S	4	0.2	9	0.4	28	1.3	50	2.3	57	2.6	19	0.9	167	7.6
SSW	3	0.1	17	0.8	35	1.6	50	2.3	70	3.2	31	1.4	206	9.4
SW	1	0.0	19	0.9	32	1.5	43	2.0	24	1.1	10	0.5	129	5.9
WSW	2	0.1	13	0.6	31	1.4	21	1.0	2	0.1	1	0.0	70	3.2
W	1	0.0	25	1.1	31	1.4	76	3.5	35	1.6	23	1.1	191	8.7
WNW	2	0.1	19	0.9	50	2.3	119	5.4	83	3.8	34	1.6	306	14.0
NW	1	0.0	7	0.3	62	2.8	130	6.0	90	4.1	46	2.1	336	15.4
NNW	3	0.1	19	0.9	43	2.0	71	3.3	30	1.4	14	0.6	180	8.2
	39	1.8	223	10.2	460	21.1	748	34.2	495	22.7	219	10.0	2184	100.0

MISSING HOURS 0

MEAN WIND SPEED 15.8
TOTAL NUMBER OF CALM HOURS 0 PERCENT 0.0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE LE-1.9 CLASS A

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
S	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
W	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0

MEAN WIND SPEED 24.0
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 30FT

DEG C/100M (300-33FT) LAPSE RATE -1.9/ -1.7 CLASS 8

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	2	0.1
SE	0	0.0	0	0.0	1	0.0	2	0.1	1	0.0	0	0.0	4	0.2
SSE	0	0.0	0	0.0	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
S	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
W	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	2	0.1
WNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NW	0	0.0	0	0.0	0	0.0	7	0.3	5	0.2	0	0.0	12	0.6
NNW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	0	0.0	0	0.0	4	0.2	12	0.6	7	0.3	0	0.0	23	1.1

MEAN WIND SPEED 16.7
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE -1.6/ -1.5 CLASS C

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6			
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT
N	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NNE	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	0	0.0	3	0.1
NE	0	0.0	0	0.0	0	0.0	0	0.0	6	0.3	0	0.0	6	0.3
ENE	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	0	0.0	4	0.2	0	0.0	0	0.0	4	0.2
ESE	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	2	0.1
SE	0	0.0	0	0.0	1	0.0	0	0.0	5	0.2	1	0.0	7	0.3
SSE	0	0.0	0	0.0	2	0.1	2	0.1	3	0.1	0	0.0	7	0.3
S	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	2	0.1
SSW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SW	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
WSW	0	0.0	0	0.0	0	0.0	2	0.1	2	0.1	0	0.0	4	0.2
W	0	0.0	0	0.0	0	0.0	7	0.3	4	0.2	2	0.1	13	0.6
WNW	0	0.0	0	0.0	0	0.0	0	0.0	4	0.2	1	0.0	5	0.2
NW	0	0.0	0	0.0	0	0.0	5	0.2	5	0.2	3	0.1	13	0.6
NNW	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	0	0.0	3	0.1
	0	0.0	1	0.0	6	0.3	25	1.1	32	1.5	7	0.3	71	3.3

MEAN WIND SPEED 19.0
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE -1.4/ -0.5 CLASS D

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	0	0.0	5	0.2	9	0.4	33	1.5	3	0.1	4	0.2	54	2.5
NNE	0	0.0	10	0.5	22	1.0	16	0.7	7	0.3	3	0.1	58	2.7
NE	0	0.0	5	0.2	15	0.7	10	0.5	4	0.2	17	0.8	51	2.3
ENE	1	0.0	16	0.7	20	0.9	15	0.7	3	0.1	3	0.1	58	2.7
E	1	0.0	13	0.6	15	0.7	23	1.1	6	0.3	0	0.0	59	2.7
ESE	1	0.0	14	0.6	13	0.6	10	0.5	5	0.2	1	0.0	44	2.0
SE	1	0.0	8	0.4	15	0.7	23	1.1	34	1.6	22	1.0	104	4.8
SSE	4	0.2	15	0.7	18	0.8	37	1.7	28	1.3	5	0.2	107	4.9
S	2	0.1	15	0.7	24	1.1	20	0.9	0	0.0	0	0.0	61	2.8
SSW	3	0.1	14	0.6	6	0.3	10	0.5	0	0.0	0	0.0	33	1.5
SW	3	0.1	9	0.4	8	0.4	4	0.2	1	0.0	0	0.0	25	1.1
WSW	2	0.1	11	0.5	12	0.6	19	0.9	9	0.4	1	0.0	54	2.5
W	1	0.0	7	0.3	18	0.8	28	1.3	19	0.9	8	0.4	81	3.7
WNW	1	0.0	13	0.6	12	0.6	20	0.9	20	0.9	4	0.2	70	3.2
NW	1	0.0	8	0.4	18	0.8	25	1.1	24	1.1	13	0.6	89	4.1
NNW	2	0.1	14	0.6	28	1.3	25	1.1	26	1.2	16	0.7	111	5.1
	23	1.1	177	8.1	255	11.7	318	14.6	189	8.7	97	4.5	1039	48.6

MEAN WIND SPEED 14.6
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/89 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE -0.47 1.5 CLASS E

SPEEDS(MI/HR)

DIRECTION	.8-3.5 SUM	.8-3.5 PERCENT	3.6-7.5 SUM	3.6-7.5 PERCENT	7.6-12.5 SUM	7.6-12.5 PERCENT	12.6-18.5 SUM	12.6-18.5 PERCENT	18.6-24.5 SUM	18.6-24.5 PERCENT	>=24.6 SUM	>=24.6 PERCENT	SUM	PERCENT
N	0	0.0	5	0.2	8	0.4	14	0.6	20	0.9	2	0.1	49	2.2
NNE	3	0.1	3	0.1	14	0.6	24	1.0	4	0.2	1	0.0	46	2.1
NE	0	0.0	6	0.3	12	0.6	7	0.3	2	0.1	3	0.1	30	1.4
ENE	1	0.0	8	0.4	9	0.4	7	0.3	6	0.3	1	0.0	32	1.5
E	1	0.0	10	0.5	15	0.7	16	0.7	6	0.3	0	0.0	48	2.2
ESE	1	0.0	8	0.4	13	0.6	10	0.5	1	0.0	0	0.0	33	1.5
SE	5	0.2	6	0.3	18	0.8	10	0.5	9	0.4	9	0.4	57	2.6
SSE	2	0.1	8	0.4	25	1.1	16	0.7	7	0.3	2	0.1	60	2.8
S	5	0.2	15	0.7	13	0.6	6	0.3	9	0.4	0	0.0	48	2.2
SSW	2	0.1	11	0.5	16	0.7	14	0.6	27	1.2	5	0.2	75	3.4
SW	0	0.0	4	0.2	20	0.9	21	1.0	16	0.7	4	0.2	65	3.0
WSW	3	0.1	4	0.2	12	0.6	5	0.2	5	0.2	2	0.1	31	1.4
W	1	0.0	6	0.3	15	0.7	13	0.6	8	0.4	9	0.4	52	2.4
WNW	1	0.0	5	0.2	14	0.6	14	0.6	10	0.5	0	0.0	44	2.0
NW	3	0.1	6	0.3	10	0.5	27	1.2	16	0.7	10	0.5	72	3.3
NNW	0	0.0	6	0.3	10	0.5	21	1.0	19	0.9	3	0.1	59	2.7
	28	1.3	111	5.1	224	10.3	222	10.2	165	7.6	51	2.3	801	36.8

MEAN WIND SPEED 14.3
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE 1.6 / 4.0 CLASS F

SPEEDS(MI/HR)

	.6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6			
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT
N	1	0.0	0	0.0	3	0.1	6	0.3	2	0.1	0	0.0	12	0.6
NNE	0	0.0	0	0.0	0	0.0	6	0.3	3	0.1	0	0.0	9	0.4
NE	0	0.0	1	0.0	1	0.0	4	0.2	0	0.0	0	0.0	6	0.3
ENE	1	0.0	1	0.0	0	0.0	1	0.0	0	0.0	0	0.0	3	0.1
E	0	0.0	0	0.0	0	0.0	1	0.0	2	0.1	0	0.0	3	0.1
ESE	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	2	0.1
SE	0	0.0	0	0.0	2	0.1	4	0.2	1	0.0	1	0.0	8	0.4
SSE	0	0.0	2	0.1	6	0.3	10	0.5	1	0.0	0	0.0	19	0.9
S	1	0.0	4	0.2	5	0.2	2	0.1	2	0.1	0	0.0	14	0.6
SSW	0	0.0	5	0.2	4	0.2	3	0.1	0	0.0	0	0.0	12	0.6
SW	0	0.0	3	0.1	7	0.3	8	0.4	4	0.2	0	0.0	22	1.0
WSW	0	0.0	1	0.0	8	0.4	8	0.4	4	0.2	0	0.0	21	1.0
W	1	0.0	3	0.1	6	0.3	5	0.2	5	0.2	0	0.0	20	0.9
WNW	0	0.0	1	0.0	3	0.1	10	0.5	2	0.1	0	0.0	16	0.7
NW	0	0.0	2	0.1	1	0.0	3	0.1	0	0.0	0	0.0	6	0.3
NNW	0	0.0	1	0.0	4	0.2	8	0.4	1	0.0	0	0.0	14	0.6
	4	0.2	24	1.1	50	2.3	81	3.7	27	1.2	1	0.0	187	8.6

MEAN WIND SPEED 13.6
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/89 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE GT. 4.0 CLASS G

SPEEDS(MI/HR)

DIRECTION	.6-3.5 SUM	.6-3.5 PERCENT	3.6-7.5 SUM	3.6-7.5 PERCENT	7.6-12.5 SUM	7.6-12.5 PERCENT	12.6-18.5 SUM	12.6-18.5 PERCENT	18.6-24.5 SUM	18.6-24.5 PERCENT	>=24.6 SUM	>=24.6 PERCENT	SUM	PERCENT
N	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
NNE	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	2	0.1
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
E	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ESE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	0	0.0	1	0.0	2	0.1	1	0.0	4	0.2
S	0	0.0	0	0.0	4	0.2	1	0.0	5	0.2	0	0.0	10	0.5
SSW	0	0.0	0	0.0	4	0.2	2	0.1	0	0.0	0	0.0	6	0.3
SW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WSW	0	0.0	0	0.0	0	0.0	2	0.1	1	0.0	0	0.0	3	0.1
W	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WNW	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	2	0.1
NW	0	0.0	0	0.0	3	0.1	1	0.0	2	0.1	0	0.0	6	0.3
NNW	0	0.0	0	0.0	2	0.1	1	0.0	0	0.0	0	0.0	3	0.1
	0	0.0	1	0.0	16	0.7	9	0.4	10	0.5	1	0.0	37	1.7

MEAN WIND SPEED 15.0
CALM HOURS 0
PERCENT CALM 0.0
MISSING 0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT) LAPSE RATE
ALL STABILITIES

	SPEEDS(MI/HR) .6-3.5		3.6-7.5		7.6-12.5		12.6-18.5		18.6-24.5		>=24.6		SUM	PERCENT
DIRECTION	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT		
N	1	0.0	11	0.5	20	0.9	53	2.4	25	1.1	6	0.3	116	5.3
NNE	3	0.1	13	0.6	39	1.8	45	2.1	14	0.6	4	0.2	118	5.4
NE	0	0.0	12	0.6	28	1.3	21	1.0	12	0.6	20	0.9	93	4.3
ENE	3	0.1	25	1.1	29	1.3	24	1.1	9	0.4	4	0.2	94	4.3
E	2	0.1	23	1.1	31	1.4	44	2.0	14	0.6	0	0.0	114	5.2
ESE	2	0.1	22	1.0	26	1.2	22	1.0	10	0.5	2	0.1	84	3.9
SE	6	0.3	14	0.6	37	1.7	38	1.7	52	2.4	33	1.5	180	8.3
SSE	6	0.3	25	1.1	52	2.4	69	3.1	41	1.9	3	0.4	200	9.2
S	8	0.4	34	1.6	47	2.2	30	1.4	16	0.7	0	0.0	135	6.2
SSW	5	0.2	30	1.4	30	1.4	29	1.3	27	1.2	5	0.2	126	5.8
SW	3	0.1	17	0.8	35	1.6	33	1.5	21	1.0	4	0.2	113	5.2
WSW	5	0.2	16	0.7	32	1.5	36	1.7	21	1.0	3	0.1	113	5.2
W	3	0.1	16	0.7	39	1.8	54	2.5	37	1.7	19	0.9	168	7.7
WNW	2	0.1	19	0.9	30	1.4	46	2.1	36	1.7	6	0.3	139	6.4
NW	4	0.2	16	0.7	32	1.5	63	2.9	51	2.3	30	1.4	196	9.0
NNW	2	0.1	21	1.0	45	2.1	56	2.6	47	2.2	19	0.9	190	8.7
	55	2.5	314	14.4	552	25.3	662	30.4	433	19.9	163	7.5	2179	100.0

MISSING HOURS 5

MEAN WIND SPEED 14.6
TOTAL NUMBER OF CALM HOURS 0 PERCENT 0.0

ARTIFICIAL ISLAND 4/88- 6/88 JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
LOCATION 300FT

DEG C/100M (300-33FT)

DIRECTION VS SPEED

SPEEDS(MI/HR)

DIRECTION	.6-3.5 SUM	.6-3.5 PERCENT	3.6-7.5 SUM	3.6-7.5 PERCENT	7.6-12.5 SUM	7.6-12.5 PERCENT	12.6-18.5 SUM	12.6-18.5 PERCENT	18.6-[illegible].5 SUM	18.6-[illegible].5 PERCENT	>=24.6 SUM	>=24.6 PERCENT	SUM	PERCENT
N	1	0.0	11	0.5	20	0.9	53	2.4	25	1.1	6	0.3	116	5.3
NNE	3	0.1	13	0.6	39	1.8	45	2.1	14	0.6	4	0.2	118	5.4
NE	0	0.0	12	0.5	28	1.3	21	1.0	12	0.5	20	0.9	93	4.3
ENE	3	0.1	25	1.1	29	1.3	24	1.1	9	0.4	4	0.2	94	4.3
E	2	0.1	23	1.1	31	1.4	44	2.0	14	0.6	0	0.0	114	5.2
ESE	3	0.1	22	1.0	27	1.2	22	1.0	10	0.5	2	0.1	86	3.9
SE	6	0.3	14	0.6	37	1.7	38	1.7	53	2.4	33	1.5	181	8.3
SSE	6	0.3	25	1.1	52	2.4	70	3.2	41	1.9	8	0.4	202	9.2
S	8	0.4	34	1.6	47	2.2	30	1.4	16	0.7	0	0.0	135	6.2
SSW	5	0.2	30	1.4	30	1.4	29	1.3	27	1.2	5	0.2	126	5.8
SW	3	0.1	17	0.8	35	1.6	33	1.5	21	1.0	4	0.2	113	5.2
WSW	5	0.2	16	0.7	32	1.5	36	1.6	21	1.0	3	0.1	113	5.2
W	3	0.1	16	0.7	39	1.8	54	2.5	37	1.7	19	0.9	168	7.7
WNW	2	0.1	19	0.9	30	1.4	46	2.1	36	1.6	6	0.3	139	6.4
NW	4	0.2	16	0.7	32	1.5	63	2.9	51	2.3	30	1.4	196	9.0
NNW	2	0.1	21	1.0	45	2.1	56	2.6	47	2.2	19	0.9	190	8.7
	56	2.6	334	14.4	553	25.3	664	30.4	434	19.9	163	7.5	2184	100.0

MISSING HOURS 0

MEAN WIND SPEED 14.6
TOTAL NUMBER OF CALM HOURS 0 PERCENT 0.0
FORTRAN STOP

AMENDED PAGES TO HOPE CREEK RERR-4

Liquid Pathways

Doses to individuals in the population from liquid releases are primarily from the seafood ingestion pathway. The total body dose to an individual was calculated to be 2.88E-01 mrem. The calculated highest organ dose from liquid releases was 6.56E-01 mrem to the liver. The calculated population total body dose was 3.38E+00 person-rem. The calculated average total body dose to the population within fifty miles of the site was 6.26E-04 mrem/person.

Air Pathways

The resulting total body and skin doses to an individual were calculated to be 1.52E-2 mrem and 3.31E-2 mrem respectively. The highest organ dose due to radioiodines and particulates with half-lives greater than 8 days was 9.87E-02 mrem to the thyroid. The calculated population total body dose was 3.79E+00 person-rem. The calculated average total body dose to the population within fifty miles of the site was 7.04E-04 mrem/person.

Direct Radiation

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

TLD's at onsite locations 2S-2 and 5S-1, which are 0.3 miles and 0.9 miles from the point of origin, averaged 4.5 and 4.0 mrads/month respectively. The values for stations 2S-2 and 5S-1 are within the statistical variation associated with the preoperational program results.

It should be noted that the nearest resident is 3.5 miles away. It can thus be concluded that there was no measurable dose to any offsite location from direct radiation.

Part F. METEOROLOGICAL DATA

Cumulative joint wind frequency distributions by atmospheric stability class at the 300 foot elevation are provided for the third and fourth quarters of 1987 as Tables 5 and 6.

HOPE CREEK GENERATING STATION
TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JULY 1 - DECEMBER 31, 1987

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	Units	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	2.75E-01	2.58E-01	25%
2. Average diluted concentration during period	uCi/ml	8.96E-08	7.08E-08	
3. Percent of applicable limit (T.S. 3.11.1.2.(a))	%	1.00E+01	9.00E+00	
B. Tritium				
1. Total release	Ci	4.70E+00	3.08E+00	25%
2. Average diluted concentration during period	uCi/ml	1.54E-06	1.00E-06	
3. Percent of applicable limit (T.S. 3.11.1.1)	%	5.38E-07	5.01E-07	
C. Dissolved and entrained noble gases				
1. Total release	Ci	5.01E-03	1.96E-02	25%
2. Average diluted concentration during period	uCi/ml	1.63E-09	1.14E-08	
3. Percent of applicable limit (T.S. 3.11.1.1)	%	8.15E-4	5.70E-03	
D. Gross alpha radioactivity				
1. Total release (1)	Ci	0.00E+00		25%
E. Volume of waste release (prior to dilution - Batch Release)	liters	1.48E+07	1.18E+07	25%
F. Volume of dilution water used during entire period	liters	3.05E+09	1.70E+09	25%

(1) Gross Alpha analyses for the fourth quarter are not available for inclusion in this report.

HOPE CREEK GENERATING STATION
TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
JULY 1 - DECEMBER 31, 1987
LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	3rd Quarter	4th Quarter	3rd Quarter	4th Quarter
Antimony-122	Ci			1.02E-05	3.99E-06
Antimony-124	Ci			5.81E-05	
Cobalt-58	Ci			7.68E-03	9.14E-03
Cobalt-60	Ci			3.35E-03	6.04E-03
Chromium-51	Ci			5.41E-02	3.75E-02
Cesium-137	Ci			7.25E-06	4.73E-06
Iron-55	Ci				4.13E-02
Iron-59	Ci			1.09E-03	3.20E-03
Iodine-131	Ci			2.68E-05	2.57E-05
Iodine-133	Ci			5.34E-04	5.65E-04
Manganese-54	Ci			4.30E-03	1.15E-02
Manganese-56	Ci			1.79E-05	
Mercury-203	Ci			4.18E-06	2.47E-06
Molybdenum-99	Ci			5.16E-04	4.85E-04
Nickel-65	Ci			3.30E-05	8.52E-08
Niobium-95	Ci				9.21E-06
Niobium-97	Ci			1.39E-04	3.32E-05
Ruthenium-106	Ci			1.09E-05	
Sodium-24	Ci			1.25E-01	9.86E-02
Strontium-92	Ci			2.63E-05	
Technetium-99m	Ci			2.24E-03	1.24E-03
Tellurium-132	Ci			1.36E-05	2.80E-06
Technetium-100	Ci			1.62E-05	2.04E-05
Yttrium-91	Ci			2.78E-03	2.85E-05
Yttrium-91m	Ci			8.06E-03	1.61E-03
Zinc-65	Ci			6.31E-02	4.69E-02
Zinc-69	Ci			1.08E-03	8.93E-05
Zirconium-97	Ci			2.35E-05	
Unidentified	Ci			5.77E-04	2.45E-04
Total (Above)	Ci			2.75E-01	2.58E-01